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THE FORM OF TYPHOID FEVER CALLED MOUNTAIN FEVER—WIDAL'S TEST.

AFEBRILE CASES.

BY CHAS. E. WOODRUFF, M.D., U. S. ARMY.

JACKSON BARRACKS, NEW ORLEANS, LA.

When the eastern part of the United States was being settled, it was discovered that peculiar fevers arose. It is now almost certain, that at first the fevers were invariably malarial, but as the lands became drained, the farms cultivated and the water supplies infected with typhoid bacilli imported by the settlers, malaria disappeared and typhoid fever took its place. The first is the disease of new lands, the latter the result of insanitary conditions brought about by the settlers themselves. In the stage of transition there were numerous cases of "low fevers" which could not be positively stated were malaria or typhoid and for a while it was thought that double infections or hybrid cases occurred, hence the former frequent use of the obsolete term typho-malaria. As for double infections we know that they are so extremely rare as to need no further consideration, and if a doubtful case does not respond to quinin and does not show the plasmodium of Laveran it is surely typhoid. As for a hybrid disease neither malaria nor typhoid, we can be equally positive and state that since the discovery of Laveran's organisms and the typhoid bacillus, no such case has ever been found. The old method of giving quinin in typhoid no doubt arose from thus curing the malarial cases which were believed to be typhoid.

Now, in the early history of the settlement of the elevated western parts of the country, a similar confusion occurred in relation to its fevers. In those parts of Montana in which the writer has lived it can be positively stated that there is no native malaria. Every case found is an importation; for instance, a soldier or civilian arrives from St. Louis and after a few months has chills, fevers and sweats, the plasmodium is found and the case is promptly cured by quinin. Such cases curable by quinin and in which the malarial organism is found, never arise in persons who have lived a long time in the West, that is, a time sufficiently long to exclude the possibility of the organism having remained latent in the liver and spleen. There is no data at hand to substantiate such a dogmatic statement, but it can be accepted as the writer's individual experience. Now, the rarity of malaria was not known at first and indeed is not now known, for that matter, for the writer has personally seen typical cases of typhoid fever, diagnosed and reported as malarial remittents, treated with small doses of quinin and when the case recovered in due time, it was held up as a triumph of the persistent use of small doses of quinin for three or four weeks. With modern methods such absurd mistakes are impossible. In early days no doubt malaria was imported as now, and no doubt that typhoid was also imported, but physicians had so many atypical cases of fever that a new name was coined for them, "mountain fever." Whenever a case went to the postmortem table, the lesions of typhoid fever were invariably found, so that a few physicians dropped the term at once. An effort was made to prove that mountain fever was typho-malaria, and if the proof was logical, then there is no such thing as mountain fever because there is no typho-malaria. It was supposed that the term mountain fever was obsolete, but recently a Montana physician has informed the writer that such a disease really exists, that severe cases of fever are undoubtedly typhoid but the milder cases are not. Now, a great deal of this confusion results from ignorance of the fact that when a new country is being settled the first cases of typhoid are rarely recognized, because of their atypical nature. Even in the older East many physicians still refuse to call a case typhoid unless the fever lasts three weeks or more and is severe. Then again it is quite safe to assume that the altitude or some other unknown causes, effect a decided change in the character and activity of the bacillus, causing cases somewhat different from those in the East. But the differences are not marked, for it will be found that every eastern city has just as great a proportion of atypical cases as appear in the West. Indeed the occurrence of typical typhoids is so rare that we are astonished to find one. It is so variable that at one time it was considered to be due to several causes, several varieties of bacilli. Every case in the West can be exactly duplicated in the East by men of large experience. Now, this rule of absence of rigid type was not known by the earlier western physicians, hence they only too readily appropriated the term mountain fever. There are a large number of residents of Montana who are so thoroughly imbued with the idea that it is the best climate in the world, that they will not listen to any such bosh as the prevalence of typhoid fever. Records show that typhoid fever has occurred now and then at Fort Custer for years, and one postmortem of a man who died after a few days sickness showed perforation. In spite of all these cases, an old resident of Fort Custer told the writer that he never heard of a case of typhoid fever in Montana. Some of this feeling of local pride possibly blinds a few of the physicians; for instance, a certain physician saw one of the writer's cases in which the roseola was perfect and the course of the disease left no doubt as to the diagnosis, yet he said it was only a "touch" of malaria and she would be "up" in a few days. She had been "down" more or less for three weeks and was "down" about ten days after his diagnosis was made, the quinin taken not having a particle of influence. In another case, the man was advised to go to bed at once, but concluded to consult a physician of Billings, who thought it was

mountain fever and advised him to return to the hospital. The patient thought he could cure himself with a "good drunk," but did not succeed, and when he did come into the hospital he was one of the worst cases we had.

Finally, the same series of events is now taking place in the West as it has already taken place in the older East, that is, the more concentrated the population becomes the quicker is the infection from patient to patient, and the more closely do the cases resemble the typhoid we were accustomed to call the classic type. Formerly, when the water courses were not markedly infected, it is reasonable to assume that considerable time may have elapsed after the bacilli were discharged from one patient before they were taken up by another, a time in which it is perfectly possible, even probable, that they took on new and less malignant characters. Just as soon as a western town or neighborhood becomes crowded and it is possible for the water-supply to become polluted, the cases are infected almost from one patient to the next, not giving time for the bacilli to lose virulence, but possibly increasing in virulence. As a consequence, the cases are so severe as to leave no doubt as to the diagnosis. Hence the term mountain fever is not heard nearly as often as formerly, and then only in the more remote, smaller towns, or in isolated places, where we can presume cases occur as they did twenty-five years ago.

During the past summer and fall, there occurred at Fort Custer, Montana, an epidemic of fever, which was undoubtedly typhoid and which could have been pronounced mountain fever by those who hold to such views, and the following analysis of the cases is made with the express purpose of helping to abolish the use of such an illogical term.

It is an old habit to conceal one's ignorance of the disease he is treating by giving it some neutral name such as "slow," "pernicious," "gastric," "bilious," "typho-malarial," "swamp," "Red River fever," "irritative," and so on indefinitely. In epidemics when it is desired to conceal the true state of affairs the same euphemism is used. Nowadays when the public is beginning to recognize that every case of infectious disease is apt to spread the poison broadcast, they are calling for definite diagnoses and the abolition of meaningless terms.

The danger of typhoid is extremely great as a moment's thought will show, because no means are taken to disinfect the stools, and dieting is considered superfluous. The water courses are becoming more and more infected and are spreading fatal typhoid throughout the whole West. There is already a frightful state of affairs in some localities. If rumor is to be believed a bad epidemic has occurred in Miles City from infection brought down by the rivers, for every town considers itself entitled to pour its sewage into its river, to be consumed by the next town below. In arid countries like Montana, where the only available water is in the streams, as wells and springs are not to be found, it certainly behooves the people to take measures to protect the streams. They are the very life of the country, for no one can live very far from them; unless care is taken they will be the death of the country.

At Fort Assinniboine, Mont., some years ago a severe epidemic of fever occurred, and it was shown subsequently that the infection was brought by the water (Beaver Creek) which had been infected by Indians and half-breeds camped on its banks a mile or two above the fort; one or more of these people dying of the disease. In this case there was considerable irritation shown by the officer having charge of the water supply, at the imputation that the water was at fault. He stated with great vehemence that there was not a single case of typhoid in the lot, that they were all mountain fever not due to the water. This vicious term, then, actually interferes with proper sanitation in the West, and the sooner it is abolished the better.

Travel in the West is sometimes unsafe for this reason, and it is decidedly to the interest of the railroads to be positively assured of the purity of the water supplied to the cars for drinking purposes, or to have it properly sterilized if they are not certain. Entirely too often do we hear of typhoid fever occurring in persons who have been traveling in the West, and it is to the interests of all railroads to make it clear to their patrons that the water used in the cars is above suspicion.

Even in isolated places there is danger, because recent reports brought by intelligent priests and others, who have been among the Indians a great deal, show that it is not uncommon in the summer and fall, for the Indians to have a sickness which can be nothing else than typhoid fever. They do not complain much, merely lounge about their tepees for three or four weeks "out of sorts," more or less feverish, sometimes with high fever, in fact a picture of some of our cases in which the diagnosis is beyond a doubt.

Case 1.—D. E., age 22, colored recruit, one month in post. May 2, chilly sensations. May 5, Admitted to hospital. Temperature in evening over 103 for six days, then between 99 and 100 until May 26. Quinin had no effect. Widal's test, with blood, negative May 23 and 25, but with serum from blister, positive May 24 and June 2. July 4 blood gave positive reaction. June 2 this case took measles, fever lasting until June 7. The disease was derived from another recruit, who brought the infection to the post. Baths not ordered.

Case 2.—O. G., age 22, colored soldier, one year at post, was sick only three days before entering hospital June 17. Headache, limbs and joints stiff and sore. No appetite. Very slight sore throat, constipation. Fever lasted only four days November 3. Perfect Widal reaction.

Case 3.—C. T. B., colored nurse, age 24, one and one-half years at the post. May 30, had measles—contracted, as did Case 1, from recruit. Eruption June 3. June 6–8, convalescent and helped to nurse Case 1 who was brought into isolation ward with measles June 4. In these few days while susceptible to any infection, he probably became infected with typhoid, possibly from direct contact with his patient. He did not complain until June 21, when he "felt badly" and went to bed with temperature 104, next evening it was 105. He became unconscious quickly, had great subsultus, and died June 30. Had incontinence of bladder and bowels two days. Though he was in bed but nine days, the postmortem showed typical lesions of end of third week, *i. e.*, ulceration nearly completed, a few patches not having sloughed off. This case presented a picture of profound poisoning, and is extremely interesting as showing the fact so noticeable in many of these cases, that at first the patient may not have sufficient symptoms to cause him to notice them. He was doing hard work for the first ten or twelve days of the disease. Cultures from the enlarged spleen were used for Widal's test in all subsequent cases. Widal's test June 27 negative. The blood of June 28 gave an incomplete reaction in one hour, at the Surgeon-General's office, "while the majority of the bacilli had become agglutinated there were yet to be seen quite motile organisms in all fields." Fourteen cold baths were given.

Case 4.—L. B., age 25, colored soldier, one year and three months at post. Admitted to hospital August 5. Diarrhea a few days followed by constipation. Temperature above normal ten days and subnormal about one week. No data as to Widal's test. Baths not ordered.

Case 5.—S. G., colored soldier, age 22, one year at post. Admitted August 15. Headache, chill of several hours. For a few days stools were soft and of a greenish yellow, then bowels generally constipated. Fever lasted until September 9.

Widal's test August 21, negative, August 25, doubtful. (S. G. O.) "Some marginal clumping, but the majority of the bacilli actively motile at the end of one hour September 4 and 5, positive." September 23, partial reaction (agglutination and immobility not complete). Twenty-nine baths.

Case 6.—V. V., age 49, white. Admitted August 16, temperature 99.4, rising to 104 in the evening. It remained high (102 to 103) for ten days, then gradually approached the normal, which was reached in ten days more. Time of origin unknown, but he was sick for at least two weeks at Lame Deer before he entered the hospital. The nervous symptoms were very marked. In the beginning he was semi-delirious and irresponsible and destroyed a vocabulary and grammar of the Cheyenne language on which he had been at work for fifteen years. He became stupid and apathetic, careless of dress and appearances, and so mentally unbalanced that his friends brought him to the hospital for treatment of acute insanity due to worry. He was semi-comatose for fifteen days; had retention of urine, weak pulse and was not expected to live. Needed stimulation throughout. For three or four days typical "pea soup diarrhea," but subsequently there was obstinate constipation. Tongue badly coated throughout, becoming brown in third week; mouth required constant attention. There was a marked roseola. About August 20 Widal's test resulted in immediate cessation of movement but no agglutination. August 22, agglutination marked but some movement. August 31, perfect reaction. September 23, perfect reaction. Sponge bath given every two hours if temperature was over 103; about eight were required.

There was a partial aphasia in this case, which lasted well into convalescence. His memory was also defective during convalescence.

Case 7.—J. S., colored soldier, age 23. At post one year and eight months. August 17, headache; 18th, fainted in ranks; 19th, admitted to hospital; generally constipated, sometimes natural movements. Tongue slightly coated and swollen but cleared off in about fifteen days. Evening temperature over 101 for twenty-nine days, reaching normal in five more days. Eight times temperature reached 104 or over, three times it was 105. Comfortable throughout, no nervous symptoms. Quinin tried eleven days with no effect. Widal's test, August 21 doubtful, August 22 partial, August 31 positive, September 5 positive at S. G. O., September 22, positive. Considerable emaciation, convalescence rapid. Twenty-two baths were required.

Case 8.—W. B., colored soldier, age 24, two and one-half years in service and at post. August 24, chill; 25th, headache, but had "felt badly" three days. Constipation throughout disease, tongue swollen and coated; no other symptoms. Temperature variable, evening rise for eight days, once going to 104, usually 100 to 101. September 1 to 9, temperature normal. Got up September 4. September 10, temperature rose to 102.5 and remained high until September 14, when it gradually came to normal on the 21st. This was the first case in which there was a period of normal temperature (afebrile) in the middle of the course. He was perfectly comfortable throughout, and resented confinement. Widal's test September 4, partial reaction, agglutination but some movement, September 22 and 23, positive. Six baths needed.

Case 9.—R. H., colored soldier, age 24, in service twelve years and four months, at post one half year. Had a mild attack of acute melancholia in June. August 27 admitted to hospital with temperature 103.6, complained that for two weeks he had had pains in the loins, general malaise and weakness, occasional chills, and feverish at night but not in morning. Generally constipated, tongue large, pale and slightly coated. Evening temperature gradually receded from 102.5 until it reached normal in eleven days, but it varied a little for six days more. He became perfectly comfortable as soon as he was put to bed. Had slight sore throat. Widal's test, September 4 positive, though there was a slight movement of a few bacilli. Baths not needed; temperature always below 102.5 after admission.

Case 10.—B. G., colored soldier, age 22, at post one year and one month. In August was at Lame Deer, on Tongue River, where he felt badly having headaches off and on. August 21 came to Custer. August 28 admitted to hospital complaining that for three days had had sick headache and generally out of sorts. Temperature 101: on the 29th rose to 104; 30th and 31st rose to 101; September 1, 100. It then did not rise above 99 for five days. September 7, it was 100, and subsequently strictly normal. Quinin (650 mg.) was given twice or thrice daily until September 9, and seemed to cure the fever, for the temperature gradually went down. Tongue was so coated as to require mouth wash. Was perfectly comfortable throughout after he went to bed. Widal test on September 4; there was cessation of movement but no agglutination. He went to duty September 1 feeling perfectly well. September 16 he returned as he did not seem to regain strength. Temperature normal until 29th, when it rose suddenly to 102.5, and there was a daily rise from that time on for forty-eight days when he was discharged for acute tuberculosis. Fever was always moderate (100), rarely over 101, tongue slightly coated. At first he was considered to have a relapse, for Widal's tests gave September 28 and 29, negative; October 3, positive; October 10 and 17, perfect; October 16, negative (S. G. O.). September 29 he had pains in left chest, usually near heart, worse on motion or turning over, and he had a chill that day, but nothing abnormal was discovered in the chest after repeated examinations, until October 14, when there were suspicious sounds in right apex. On 16th had night sweats and these were repeated several times. Emaciation now became greater, notwithstanding increase of food, tonics and stimulants, and November 6, there was decided involvement of both lungs and effusion in left pleura, which was absorbed within a week. Had constant cough but no sputum. Tubercle bacilli were only found once in the mucus which came from the nose and mouth. Only one bath was required.

Case 11.—R. R., colored soldier, age 25, service three months at post. Admitted August 30; complained he was sick two days; had been at Lame Deer, on Tongue River, until two weeks previously. Had headache, was tired and had pains in his legs. Tongue coated and swollen. Temperature 102.2. Evening temperature was between 102 and 103 for nine days and gradually came to normal in fourteen days more. Was obstinately constipated throughout. Widal's test September 4, immobility but no agglutination; 21st, negative. Three baths were given.

Case 12.—J. H., colored soldier, age 23, one year and one month in service and at post. September 11 had stiff neck, pains in chest, dizziness and fever, but by 15th these left and he complained of malaise, anorexia and occasional vomiting. September 15, was admitted to hospital. Temperature 102: evening temperature remained between 104 and 105 six days and 103 three days; it gradually came down for eleven days, and then was quite irregular for nine days more, when it remained normal, except one rise to 101.2 on the third day of convalescence. Was obstinately constipated throughout. Tongue heavily coated until fourth week. Tympanites first four days with gurgling in right iliac fossa. Turpentine stupe required on third day. A loud systolic murmur heard at apex for a few days. Temperature subnormal throughout convalescence. Widal's test gave perfect reaction September 22 and 23, and October 10, 16 (S. G. O.) and 17. Twenty baths were given.

Case 13.—L. H., colored soldier, age 22, one and one-half years in service and at post. September 13 had a chill, dizziness and "smothering spell;" September 15, temperature was normal, was given laxative; September 16, morning temperature normal; evening 103.2 and was put to bed. Evening temperature then gradually came down, the normal being reached in twelve days. Was generally constipated. Tongue, which was but slightly coated at first, became heavily covered with white fur in five days. Had headache at first and "weakness in eyes." Gurgling in right iliac fossa. No other symptoms; was perfectly comfortable after the first day or two. Widal's test on September 22 and 23 gave positive reaction. Five baths were given.

Case 14.—R. B., civilian, white, age 21, one month in the vicinity. Admitted September 18; had had for two weeks malaise, headache, cramps, diarrhea and anorexia. On admission, tongue foul, tympanites, gurgling in right iliac fossa and headache. Nose bled several times during course of disease; was generally constipated; marked roseola. Temperature on admission 104.2. The evening temperature was 104.6 for two days and then gradually came to 99 in twenty-two days more, but some slight irregularities lasted for about a week longer. Tongue became brown in second week. Was comfortable and free of all symptoms after a week in bed. Widal's test September 20 and 21, positive; October 10 and 17, perfect (16th, S. G. O. positive). Twenty-four baths were given.

Case 15.—E. G., colored soldier, age 28 years, nine years and eight months in service, five years at post. September 17, began to have nose bleed, and neuralgia over eyes. The latter became so severe that he had to be taken to hospital on the 20th, pains left on the 22d and he was considered well as his temperature had been strictly normal. On the evening of 23d it suddenly rose to 102.2. The evening temperature then remained between 102 and 103.6 for eight days and then sank, reaching normal in five more days. Then for fifteen days longer it showed an irregular line oscillating between 99 and 100. In the last two weeks this case came as near to being an afrebrile

type as one could well imagine. He was perfectly comfortable throughout after his headache left, and bitterly resented being confined to bed. His bowels moved regularly but were soft until fourth week when constipation set in. Widal's test October 3, negative; October 9, positive; October 16 (S. G. O.), positive; October 17, perfect. Five baths were given.

Case 16.—T. R., white, cowboy, age 32. Had been in vicinity occasionally all summer. September 23 came to hospital with morning temperature of 100.6. Had headache; coated tongue; had been feverish several days, and "out of sorts" three weeks. His bowels moved regularly once or twice daily and stools were soft, sometimes watery, pea soup variety for a day or two but subsequently yellow. The evening temperature was about 103 the first week and 102 the second and third weeks. He left the hospital on the twenty-first day (September 13) temperature 102, because he felt perfectly well and resented the cold baths and milk diet. After the first few days he was comfortable. His tongue gradually cleaned off as his temperature fell. Roseola was marked. Widal's test September 29, negative; October 4, positive; October 10, perfect. He made a perfect recovery. Eleven baths were given.

Case 17.—J. B., colored soldier, age 27 years, five years and six month in service, five years at post. September 25, admitted to hospital, temperature 98.8; complained that his "head and eyes hurt" four or five days. Cold chills at times and was somewhat feverish. His "knees would give way." Bowels had not moved often, but stools were thin and watery when they did move. Evening temperature on 25th was 104.6, and for twelve days it was between 103 and 104. It then gradually came down, reaching normal in eight days, though it showed a slight irregularity for three weeks longer. Constipation was a constant feature. Tongue was very much coated and after clearing off once it again became foul. The nervous symptoms were very marked and culminated in post-febrile insanity. He was stupid, quiet and apathetic from the start. His pulse was always slow, and markedly dicrotic in the second and third week. In the fourth week the rate varied from 50 to 55. On the nineteenth day of the fever, he had great mental confusion, loss of memory and marked delusions, though generally quiet and stupid. The stupor gradually left with the fever, but the delusions continued. His mental depression was succeeded by mental exaltation and delusions of grandeur. He became filthy and violent, requiring constant restraint. One night he had a violent maniacal outbreak. His strength returned quite rapidly and until he was restrained he had no difficulty in knocking the nurses down whenever he wished. Widal's test September 28, partial; 29th, negative; October 3, positive; October 10 and 17, perfect; October 16, positive (S. G. O.). Twenty-two baths were given. The insanity might be called "confusional." When last heard from he was recovering.

Case 18.—W. P., colored soldier, age 34, nine years and six months in service, five years at post. September 25 admitted to hospital, temperature normal. Had general malaise and weakness for two weeks, felt as though "legs were drunk." Evening temperature on 25th was 103; 26th, 101; 27th, 99.6; 28th, normal, and no subsequent irregularity. There were positively no symptoms in his case beyond the three days of fever, after he went to bed. Widal's test September 28 and 29, and October 3, negative. It was considered simple fever from unknown causes. The diagnosis was changed on November 3, because on that day his blood gave a typical reaction. This case is remarkable for its shortness, the probable length of time he kept about without symptoms (resembling Cases 2 and 3) and the length of time before Widal's reaction was found. It was necessary to give but one bath.

Case 19.—R. G., colored soldier, age 26 years, four years and three months in service and at post. October 5 was admitted to hospital; temperature 101; complaining of headache and backache with sore throat. Had been sick four or five days. His bowels had been regular, and though they did not move often (once or twice daily) the stools were usually thin, watery and yellow. He was never constipated. The pharyngitis lasted about one week. The tongue was always more or less coated; edges red, and very tremulous. The evening temperature was 104 for sixteen days, and gradually fell to 99 in ten more days; subsequently it was for twenty days sub normal, or normal, with two rises, one 101 and one 99.6. The nervous symptoms were confined wholly to marked tremor and subsultus. He was bright mentally and always comfortable. Widal's test, October 9 and 16 positive (S.G.O.); October 17 perfect. Thirty-nine baths were given. He was quite weak during convalescence.

Case 20.—B. J., colored soldier, age 24 years, one year and eight months in service and at post. October 5, in evening, he was admitted to hospital with a temperature of 103.4. Had been sick a week. Had dull headache and was drowsy. Tongue swollen and slightly coated. Bowels regular. The temperature was irregular for six days, when it became normal and stayed normal so that he got up on the fourth day thereafter, but after he had been up three days the evening temperature began to go up until in three days (October 21) it was 104. It then kept up from 103 to 105 until November 5, when it fell to 102. November 14, it was 100; subsequently it rose again and by November 19 and 20 it was again 104, where it stayed for ten days and then gradually came to normal in six days more. Convalescence then began with sub-normal fluctuations. This case is remarkable for its afebrile interval in the second week. He required fifty-seven baths. His mind was always clear. Bowels generally constipated. There was considerable cough and expectoration. Skin became dry, rough, harsh and covered with branny scales. Widal's test was perfect on October 9, 10, 16 and 19, but on 17th it was entirely negative. October 16 negative. (S.G.O.) After the second rise of temperature in November, he had a suspicious roughening at the right apex, and had had considerable cough, but no tubercle bacilli could be found in the small amount of sputum. The nervous involvement was remarkably severe. He had throughout a persistent marked tremor of both arms, but this symptom was an exaggeration of what existed before the fever, for he has had for some time a condition resembling paralysis agitans. In the course of the fever his muscles took on a tetanoid state with "lead pipe contractions;" his face was drawn almost into the risus sardonicus of tetanus. He could not open his mouth widely, nor thrust out his tongue. The stomach would not retain food during the height of these symptoms, though he had no nausea, and the attempts to vomit caused even greater rigidity of the head muscles. December 20, Dr. D. A. Howard reports the following conditions: "paralysis and marked atrophy of certain groups of muscles as follows: Extensors of hand causing drop wrist; the interossei and smaller hand muscles giving the hand appearance of a claw; 'drop foot' also present; extensors of toes paralyzed and toes are held stiffly contracted in extreme flexion; foot and whole leg, right side, atrophied to marked extent; arm also same side; angle of mouth on right side lower, and on laughing is immobile, showing paralysis; tongue pushed toward the paralyzed side; no atrophy here noted; deep reflexes (tendon) retained; no ptosis or pupillary symptoms. In right foot there is some tenderness to touch, but no edema nor congestion; no areas of anesthesia. Right hand and arm is in continuous tremor; has been so since early in the disease. No disturbance of speech, vision or hearing." On the 23d he had some numbness in toes of right foot and has cold feeling in left foot. On the 25th he could walk with some difficulty, and on January 10 he had such marked improvement in walking and was gaining in weight so much that he was transferred to his new station, convalescent. The multiple neuritis thus described as a complication of convalescence may have had its beginning much earlier, but the nervous symptoms in the course of the fever could easily have been caused by the direct intoxication.

Case 21.—O. L., colored soldier, age 22 years, in service and at post one year and two months. Was admitted to hospital evening of October 5; temperature 102.2. Had been sick a week. Had headache and constipation. Tongue was slightly coated. In two days he was perfectly comfortable and remained so. He remained constipated and the movements were hard unless a laxative was taken. The tongue was badly coated and did not clear up until the fever left. The evening temperature was 102.2, October 6; 101 on 7th; about 100 for seven days, and then kept about 99 for fifteen days longer. It can not be said to have been normal until November 3, or twenty eight days from onset. It was as perfect a type of afrebile, or nearly afrebile typhoid, as we have. Widal's test, October 10 positive; October 16 good grouping, but a little remaining movement in center of drop. October 16 positive. (S.G.O.) No baths were necessary.

Case 22.—J. C., colored soldier, age 24; only been two months in service and at post. October 4 had stiff neck, pains in side and neck, and headache. October 6 fever in the evening. Had been complaining for a week or more of a bad feeling, and a pain over eyes when he raised them. Bowels were loose, but not many movements. Tongue nearly clean. October 7 was put to bed; temperature 100. The evening temperature was 102.8, coming down to 102 on the 12th, and then gradually falling to normal on the 20th; it was then slightly sub-normal twelve days and irregular for another week, but not varying more than a degree either side of the normal limits. October 12th (fifth day in hospital) there began a sharp attack of tympanites, which with its enormous hard distension of the abdomen, excruciating pain, tenderness over right iliac fossa and heart failure, was thought at the time to be peritonitis. Under saline laxatives, turpentine ene-

mata and stupes, and hot local applications it gradually subsided, but the tenderness over the cecum did not leave until the ninth day. It had not a particle of effect upon the temperature, which gradually subsided all this time. He made an uneventful recovery. Widal's test gave, October 9 and 16 positive. (S.G.O.) October 17 immediate immobility, but no grouping; October 19 perfect reaction. One bath was needed.

Case 23.—J. E., colored soldier, age 24, one year and ten months in service and at post. October 7 admitted to hospital. Had been "feeling bad" for three days; general pains in head, eyes, calves and shoulders. Bowels regular. Had been feverish. Tongue heavily coated and swollen. Evening temperature was 101.4, but it rose no higher, gradually coming to normal in sixteen days. This case might have been called afebrile. After he was in bed thirty-six hours, all his symptoms disappeared, except fever. He was perfectly comfortable and good natured and did not resent his confinement. He was almost always constipated. Widal's test gave, October 9, a little agglutination but immobility; October 10, many groups, but there was little activity; October 16 positive; October 16 positive (S.G.O.); October 17 some activity and some grouping. No baths were needed.

Case 24.—W. P., colored soldier, age 26 years, only one month in service and at post. October 8 admitted to hospital with noon temperature of 100; complained of feeling badly several days; now had pains in head and back, and general malaise. Tongue coated and did not clear up until long after fever went down. October 8, in evening, temperature was 103.6; on 9th and 10th 102; 11th and 12th it was 100, and was then normal three days. On 15th he got up, as he was apparently perfectly well. On 16th evening temperature rose suddenly to 101.1, and from that point the evening record gradually declined eleven days, and was subnormal for fourteen days more, when he left hospital, or thirty-seven days after onset. He was always comfortable; had no symptoms beyond constipation and fever. Widal's test, October 9 positive; October 16 agglutination at edges, but some motility left in center; October 16 positive, (S.G.O.); October 17 perfect. The peculiarity of this case was the early appearance of Widal's test and the peculiar afebrile interval. Eight baths were given.

Case 25.—W. D., colored soldier, age 27, four years and ten months in service and at post. October 8 came to hospital, with temperature 100.2, complaining of sore throat, pharynx congested and tonsils swollen. Had headache and backache for two days. Temperature rose to 102.2 in evening, but subsequently evening temperature receded, reaching normal in four days, but the curve for ten days was irregular, varying from 97 to 99. After October 22 it was normal. He was constipated throughout, and had no symptoms worth recording. The pharyngitis was gone before the fever. Under ordinary circumstances this would have been called a simple pharyngitis, and dismissed in four days, and the abnormal temperature chart (afebrile almost) for the next ten days would not have been discovered. But on October 9, Widal's test gave some grouping and marked immobility. October 10, negative, October 16 perfect reaction, October 16, negative S. G. O., October 17, few groups but some activity. It is probable that this is an aborted case or, like Case 3, the disease may have existed a long time before he felt any inconvenience from it. No baths were needed.

Case 26.—O. G., colored soldier, age 22, one year and two months in service and at post, September 26 to October 9 was under treatment for gonorrhea. October 9 went to duty but had to be excused from guard for headache and general bad feelings. Admitted to hospital with temperature of 102.2. His tongue became coated at once and mouth was so foul as to require special care, but was cleaned off in ten days. He was sleepless for a few nights. Bowels moved once or twice a day and stools were very soft and yellow. Subsequently he became constipated. The temperature was remarkably irregular throughout; the evening record was 104 for seven days, and then gradually receded, reaching normal in twenty-two days more (November 7). After being normal three days it was subnormal three days and then normal again. Widal's test, October 10, immobility but no grouping, October 16 and 17 positive. but groups were not numerous, October 16, positive S. G. O. Twenty-two baths were given.

Case 27.—W. S., colored soldier, age 26, five years and two months in service, four years and ten months in post. October 13, admitted to hospital in A.M., temperature 100.6. Had been sick two days with headache and pains in the neck. Slight cough about a week. Tongue was pale and he had foul sweetish breath. The tongue and mouth became so foul as to need special attention. Pain in head lasted two days, after which he made no complaints whatever except of hunger. There was persistent constipation throughout. The evening temperature on the 13th was 103.2, 14th and 15th 104, it then subsided to the normal by the 21st and remained subnormal until his discharge. From the 21st for eighteen days there was a regular daily curve with range of 2 to 3 degrees, which is extremely interesting, for it shows so well the fact that even in these afebrile cases there may be a daily range never found in healthy men, and more exaggerated perhaps than the subnormal records due to the weakness of convalescence. Widal's test, October 16, positive, S. G. O., October 16 perfect, 17th some restriction of motility but no grouping, 19th perfect reaction. Ten baths were given.

Case 28.—J. H., colored soldier, age 27, three years and nine months in service and at post. October 16 admitted to hospital, temperature 99.2. Had for two days "sore" and painful eyes and headache increased by bending over. Bowels were regular but became obstinately constipated. In twenty-four hours he was comfortable and had no symptoms other than constipation and fever. Evening temperature on 16th was 104.4, but it gradually declined until 27th (eleven days). It was then irregular and subnormal or but slightly above normal for seventeen days, the daily range being 2 to 3 degrees. Widal's test, October 17, no grouping but much restriction of movements, October 19, perfect reaction. Six baths were given.

Case 29.—J. B., white civilian teamster, age 37, several years at post. About October 4 he asked treatment for general malaise with pains in head, back and legs. Temperature was 103 and he was advised to come into hospital, but held off. After a week or so he took a leave of absence, consulted a civilian physician who told him he had mountain fever and advised him to return and enter hospital. He got some medicine, and thought a "good drunk" would cure him. October 22 or eighteen days after the diagnosis was made he was so sick that he had to come into hospital. Had had diarrhea several days, but this quickly changed to constipation. Temperature 99.8, pulse 100 and strong. Tongue coated, pain in right iliac fossa. Typic roseola. The nervous symptoms now came on quickly, first slight delirium, then semi-coma; deafness persisted about ten days; marked urticaria November 2, 3 and 4; paralysis of bladder November 5, requiring catheter for several days; tetanoid state of all muscles. The tongue became brown and heavily coated; mouth required constant attention. The evening temperature October 22 was 104.6; for five days it was 103, for seven days 102, becoming normal in three days more; it then remained irregularly above and below normal nine days, when November 18 it gradually rose to 102 on November 23 and reached the normal December 2—like a short relapse. It was then irregularly subnormal until he left hospital December 16. With the temperature drop November 8, all nervous symptoms gradually left. Widal's test, October 31, gave perfect reaction. Twenty-one baths were given. This case illustrates the disastrous results of not going to bed at once.

Case 30.—J. C., colored recruit, age 26, three months in service and at post. October 20 he applied for treatment for headache and constipation. Was given a laxative and felt well until 26th, when he had a chill, pain in shoulders and all his bones; 26th and 27th had severe fever and 28th came in hospital; temperature 99.6. Pains diminished quickly and in three days he was comfortable. Bowels constipated. Temperature evening 28th was 101.8 and evening rise was in neighborhood of 102 for seven days, and then reached the normal in eight days more; it then became irregular, varying from 97.4 to 100.8 until November 25 when he became convalescent. It remained subnormal until he went to duty December 12. Widal's test, October 31, gave a perfect reaction. No baths were needed. He lost no strength and emaciated very little.

Case 31.—R. A., colored soldier, age 50, twenty-seven years' service, five years at post. Admitted July 1 for fever, which lasted only three days. From the general trend of his symptoms it is probable that there was a typhoid infection, but it was considered simply continued fever, and he disappeared from the post before Widal's test could be made. This test was not made while he was in hospital as it was one of the first cases, before it was suspected that an epidemic was brewing. Widal's test in February was negative.

Cases 32, 33 and 34.—Three children, ages 2½, 3½ and 5, one colored. One white child had typical roseola. The fever was moderate in height; lasted two to three weeks; was uninfluenced by quinin in one case and the drug was not given in the others.

Case 35.—M., female, age 45, typic roseola. She was seen but once and then only after she had been sick two weeks with fever. She recovered in about two weeks more, but the course was mild; constipated; tongue coated.

The following peculiar case has not been included as it was impossible to get facts:

B., colored recruit, admitted November 8 for adenitis of left groin. He had been in the post one month. Claimed the bubo had existed only two days, but he was so evidently lying that it was suspected that he had been sick a long time, but was afraid to ask for treatment, fearing dishonorable discharge for concealing a venereal disease. Temperature was 103, and stayed up for five days. Suppurative gland was excised November 9. On the 11th his condition was so identical with the other cases that his blood was examined by Widal's test and a typic reaction obtained. His temperature remained normal after the fifth day and in ten days he was sent to another post. He claimed that he never had had typhoid fever but his statements were too unreliable to be accepted.

ANALYSIS OF CASES.

A study of these cases brings to light the following facts and deductions.

Prodromes.—The usual malaise and headache are almost universal; in a smaller number the pains are present in other parts of the body, commonly in the back. Nose bleed never occurred as a prodrome. In one or two cases it occurred during the course of the fever.

SYMPTOMS.

Constipation is almost the rule, only in the severe cases do we get diarrhea, and only very rarely is the stool of the typic pea-soup variety. The cases being mild, illustrate the rule throughout the world, that constipated cases are not to be feared. The abdomen is rarely distended, only one marked case.

The roseola was present in every white case, mild or severe.

The breath was always foul, yet of a sweetish odor.

Perspiration.—The foul sweetish odor of the perspiration was so constantly present as to be pathognomonic. It was almost possible to pick out the typhoids in the ward from the odor of the patients. Perspiration was rarely abundant.

The headache seldom lasted more than two days; as a rule it was gone after twenty-four hours in bed.

Pharyngitis and *bronchitis* were rare.

The pulse was markedly dicrotic in but one case, No. 17. The rapidity of the pulse, though never marked, was increased in proportion to the rise in temperature.

The tongue was always coated. In the mildest cases there was a whitish fur along the center of the dorsum, the edges and tip being clean. This coating was more marked in proportion to the severity of the the cases, and in the most severe it was brown and extended over the whole dorsum of the tongue.

Temperature.—Some of the cases present a chart in no way different from the typhoids found elsewhere. The greatest peculiarity is found in the few cases in which there was a distinct period of normal temperature in the course of the disease. From the fact that the disease can exist nearly two weeks without symptoms as in the fatal case (No. 3), it is quite possible that those recrudescences may be true relapses. Some cases are nearly subnormal and afebrile, though in every case there was a period of fever, perhaps of only a few days. It seems that these few cases are as near an approach to those sometimes found in Europe as we may well expect. In two cases there was not a regular daily rise and fall, but it took two or more drops daily, one record might be 104 and the next nearly normal, and so on every three hours, and this in the first or second week. The slight elevations in the fifth and sixth weeks of the protracted cases are believed to be due to the anemia, weakness and possibly nervous causes.

Spleen.—The spleen was enlarged as a rule, but it was distinctly palpable in only three cases, each of them being severe.

Nervous symptoms—As a rule, nervous symptoms were conspicuous by their absence. Some of this was no doubt due to the cold bath treatment. In the few cases in which they were marked the patients had been up and about during the first week or two. One of these had traveled 100 miles in a wagon a week previous to admission, another had been on a spree, and the third (fatal) had no symptoms for eleven or twelve days (ambulatory type). In the others the symptoms were not marked and in only two of these was there delirium. Tremor was present in two. The peculiar tetanoid state found in three was characterized by the "lead-pipe" symptom, that is, each joint resisted movement but stayed in the position in which it was bent. It is quite similar to the same symptom found in some cases of cerebral or spinal palsies. Paralysis of the bladder occurred in only two and they were severe cases in white men. Partial aphasia occurred in one case.

Complications.—Bronchitis was rare, only three or four cases. There was no pneumonia. Intestinal hemorrhage was several times suspected from sudden falls of temperature, but in no case did blood appear in the stools.

Sequelæ.—Tuberculosis occurred in one case and in one there was post-typhoid insanity. In but four cases was there extreme emaciation as a result from the fever. There were no bone lesions, abscesses and other local sequelæ due to the bacillus. Multiple neuritis occurred in one case.

Mortality.—Only one death in thirty-five cases is not remarkable when we consider the mildness of many cases and the fact that the great majority were put to bed at the very beginning of the disease. The benefit of early confinement to bed has repeatedly been noted in typhoid fever. The fatal case was an ambulatory one, still further proving the benefit of early treatment. The condition as to nourishment also has a vast influence on the course and mortality. In one epidemic in the southwest which has been described as mountain fever there were so many taken sick as to stop all work in a military post, and yet not one soldier died, and the only death in the post was an ill-nourished, old civilian employe. Outside of the post the Indians were infected in equal numbers and as they were ill-fed and badly nourished they died in large numbers. Nevertheless in other epidemics, likewise called mountain fever, the mortality among robust, well-nourished soldiers is said to have been remarkably severe, as at a cantonment on the Uncompaghre, in 1881, in which the infection very likely came from the Indians also.

Widal's test.—Widal's test gave a reaction in every case (except one) in which it was tried. It will be noticed: 1. That as a rule in the first week or two the reaction was absent or was incomplete, that is the agglutination was not perfect except perhaps at the edges of the drop, and that there were some bacilli still actively motile at the end of one hour. In the latter part of the disease the reaction was perfect in almost every case. 2. As a rule the more severe the case, *i. e.*, the higher the temperature or the nearer the case resembled typic typhoid, the sooner was the reaction obtained and the more perfect did it appear. The milder the case was, the more imperfect did the reaction appear until quite late in the disease. In one case (18) it was not found until after convales-

cence. In this form of typhoid then, Widal's test is worthless for diagnostic purposes in the earlier stages. The absence of Widal's reaction in the early course of these cases probably explains abortive cases of unknown fever in the east, such as those described by Dr. N. E. Brill in the *New York Medical Journal*, Jan. 8, 1898. In these cases there were typhoid symptoms but no reaction to the test. The tests made at Custer with cultures from the spleen of the fatal case (3) were almost identical in results with those made at the Surgeon-General's office.

The results can be explained by the supposition that there was not much intoxication and that the special substances causing Widal's reaction were very slowly formed. This supposition is in strict accordance with the symptoms and general course of these cases. Indeed in Case 3 there were no symptoms whatever in the first eleven or twelve days of what proved to be a fatal case. Negroes are said to give reaction normally, but we never found it so except in one case, who on previous tests gave a negative result; a healthy negro or one not suffering with typhoid was used as a control every day.

Roseola.—All the cases except eight were in negroes, consequently the roseola could not be seen, but in every white case the typical rose rash was present. The most marked rash found was in a child 2 years old, who was so slightly ill that she could not be confined to bed. Her fever lasted about twenty days.

Urticaria.—A general urticaria in Case 29 lasted several days during the height of the fever.

Diagnosis.—Malaria was excluded by the failure of quinin and by the presence of Widal's test in every case except one, and the failure of the test in all other negroes except one. Blood was examined in a few cases for the plasmodium, but it was not found. Then, again, recovery took place without quinin, and in every white case the roseola was present. Unfortunately, we were not so situated as to get the bacilli from the stools and urine and demonstrate them.

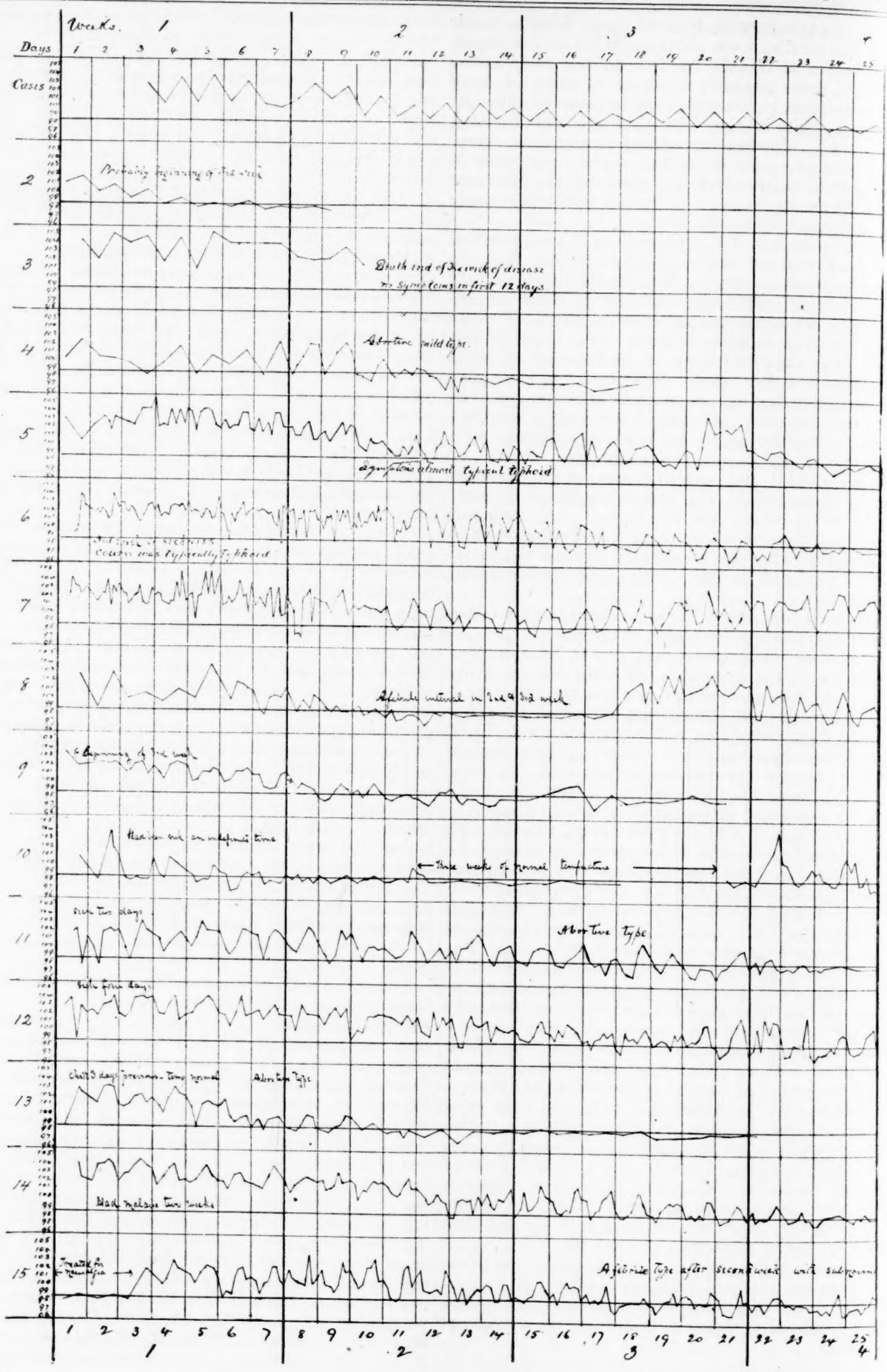
The presence of western fevers is complicated with the presence of undoubted thermic fevers during the hot season. In these elevated lands the atmosphere is clear and cloudless and the sun's rays pour down a torrent of heat, which would surely be quickly fatal were it not for the dryness of the air, which permits an enormous invisible evaporation from the skin. The loss of heat is not enough at times and a condition of fever results, but the typic sunstroke is almost unknown. If the patient goes to bed the fever lasts only from one to four days, and no medicine seems to be a specific for it. Unfortunately, the cases on which these statements are based were seen before the cold bath treatment of all fevers had become so well known, or it would have been tried, and reasoning from analogy we can rest assured that there will be a rapid, almost instantaneous, recovery if it is used in these short thermic fevers. But to call a simple fever of unknown cause of over a week's duration anything but typhoid is apt to be an error. We have shown (Case 3) how a case may be fatal, yet for the first twelve days give no symptoms whatever.

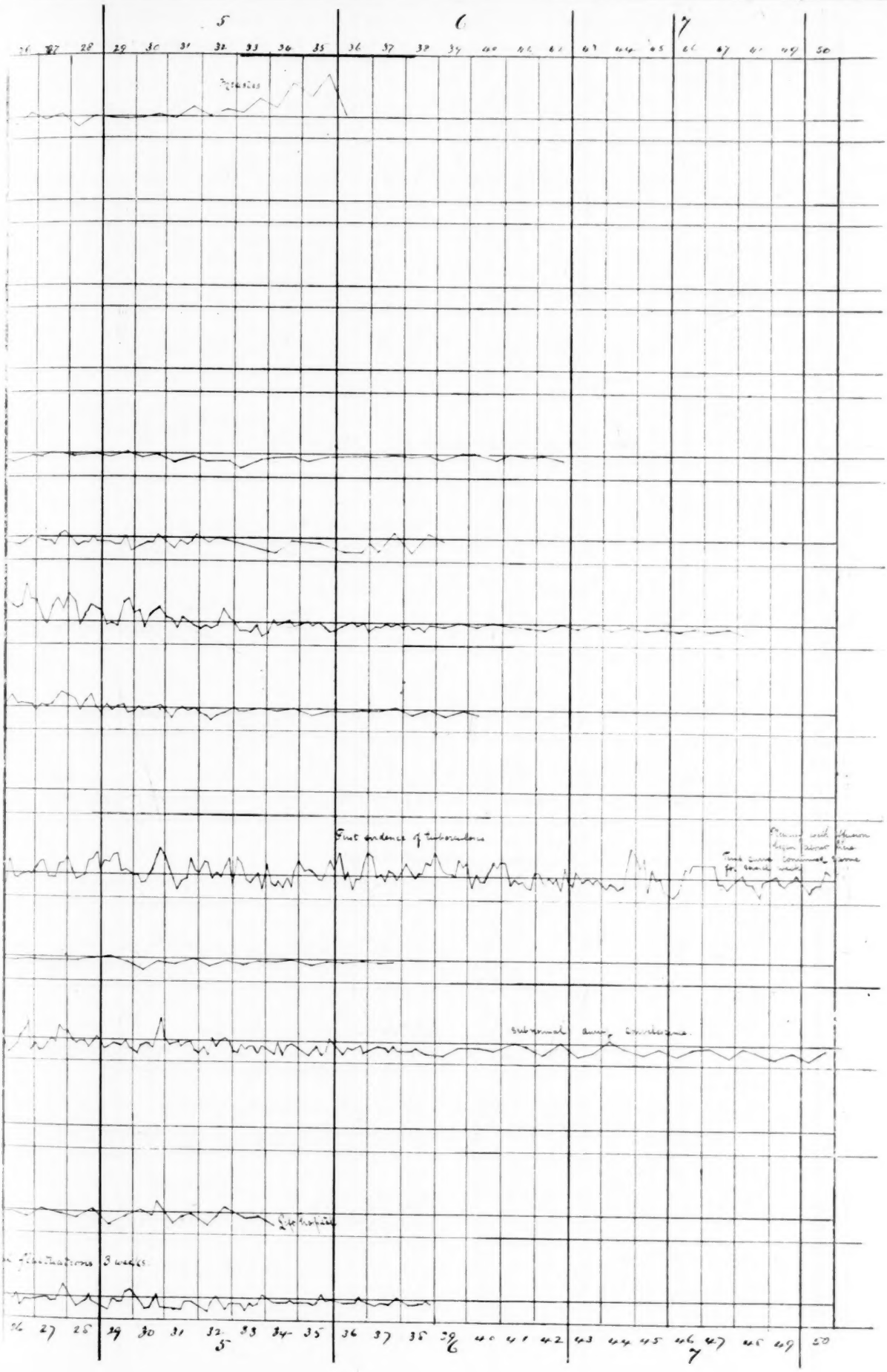
Those who claim there is a new disease must prove it, or they are guilty of criminal conduct in permitting the spread of a dangerous infection. The safety of the community demands that they be considered infectious.

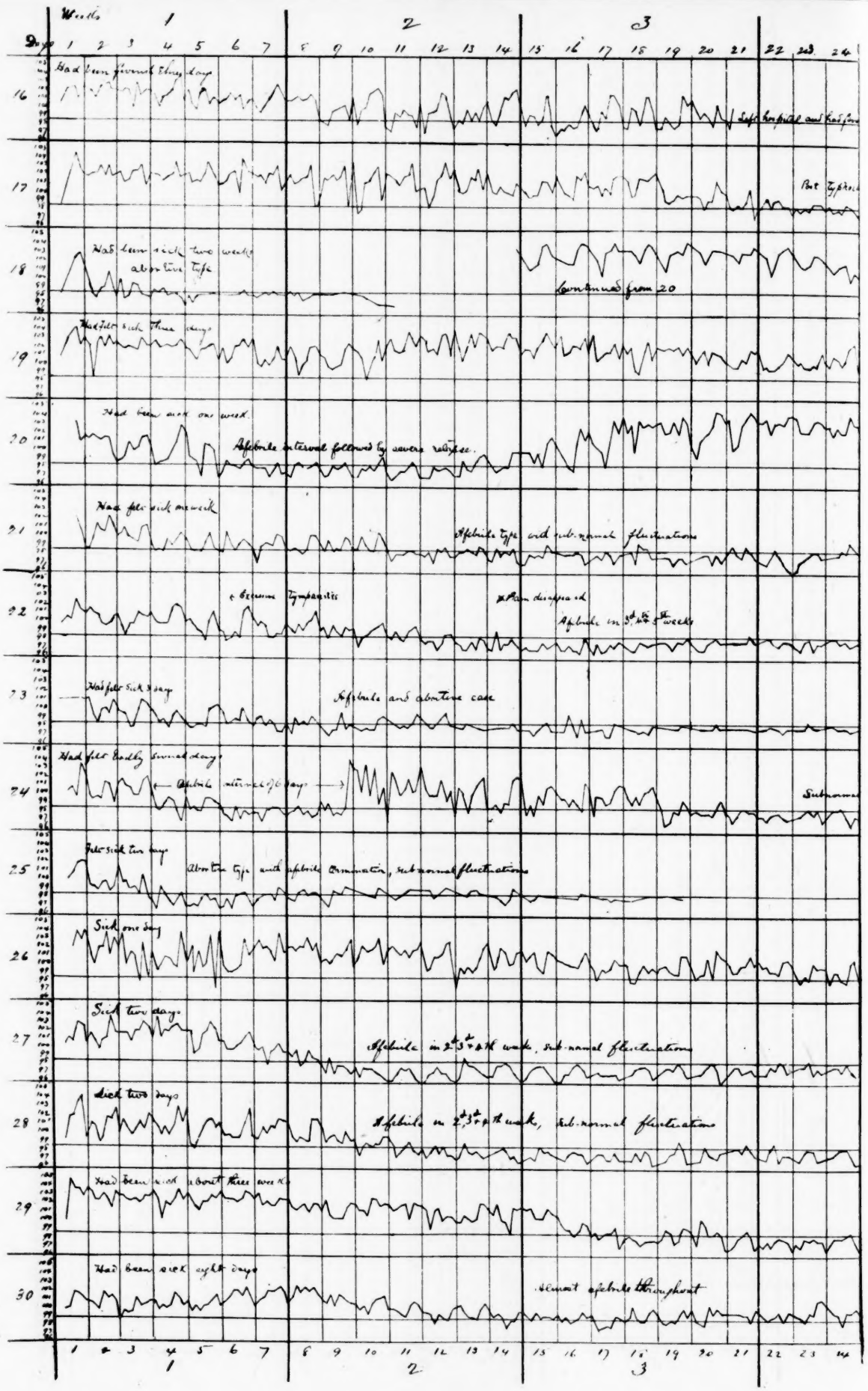
An editorial in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION Jan. 1 1898, gives a synopsis of the numerous atypic forms of typhoid fever. The lesions may be confined to any portion of the intestine, even the stomach or large bowel, and may be of any grade of severity, or they may be entirely absent from the canal and lesions confined to lymph nodes and spleen, and there may be a true typhoid septicemia without lesions. Any organ may become infected, usually as a complication, but sometimes as the sole lesion, such as typhoid abscesses of the pleura, lung, thyroid gland, peritoneum, parotid gland, biliary passages, kidneys, testicles, periosteum, bone marrow, joints, skin, subcutaneous tissues, meninges, endocardium and middle ear and heart muscles. Mountain fever is merely one of the myriad forms of this infection. It is to be hoped that all Western fevers will be subjected to Widal's test. M. Taty, in *Lyon Medical*, November 7 (*New York Medical Journal*, Dec. 4, 1897) refers to the delirium or insanity of typhoid which may mask all other symptoms and even cause cases to be sent to a hospital for insanity, as in Case 6 of our series. Widal's test has been of incalculable value to sanitary science in thus showing how wrong we have been in refusing to recognize typhoid unless the patient was sick a long time with typic symptoms of the classic type.

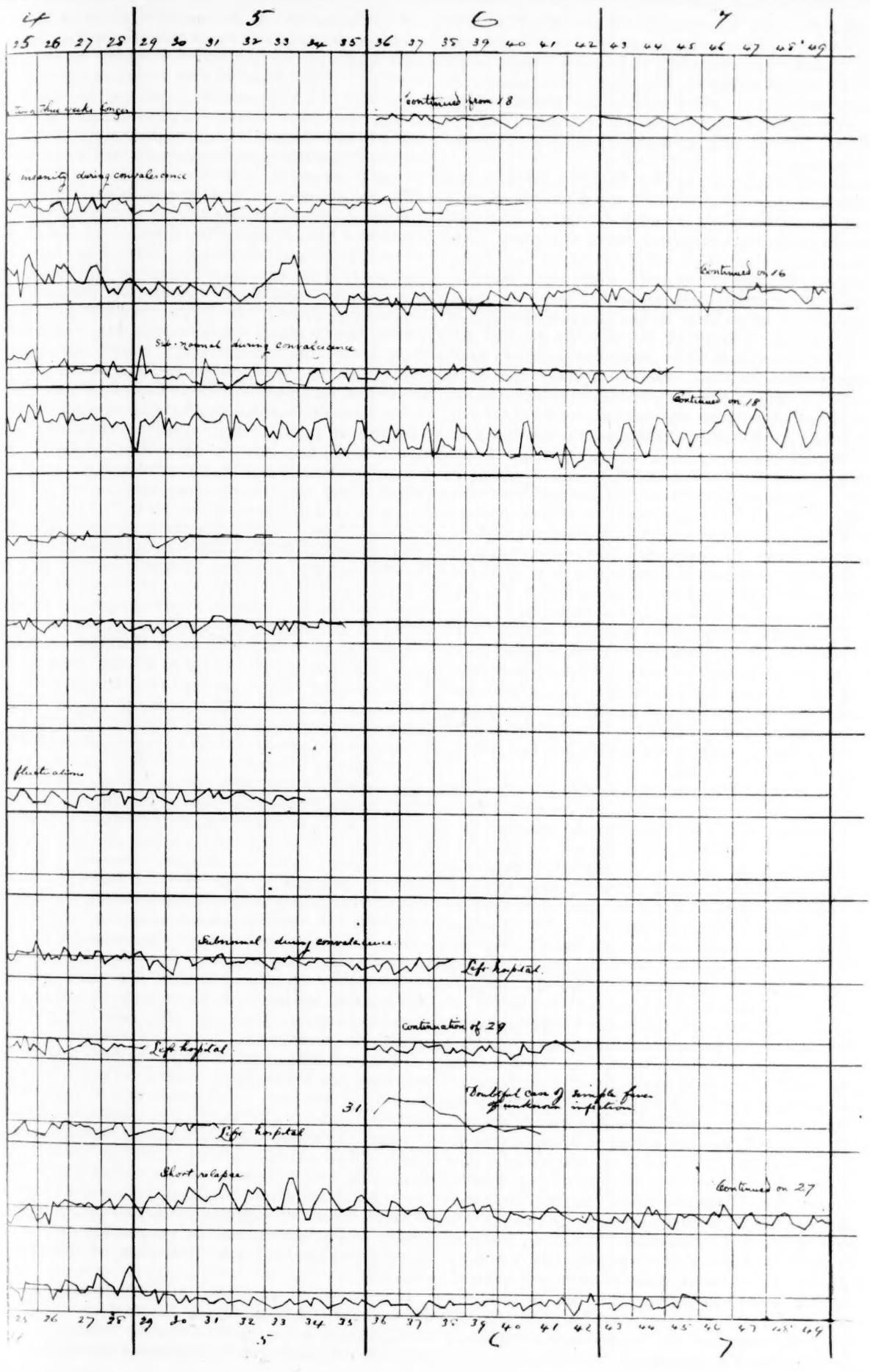
Source of infection.—As before mentioned, it is quite evident that typhoid is endemic in the Indian tribes of the West—it may be fatal for all we know, because the Indians rarely call for medical advice in such cases. They either endure it stolidly or call for the tribe's "medicine man." It is possible that western rivers have always been infected with typhoid from Indians, and we have here a logical explanation of the sporadic cases of typhoid now and then reported from isolated places in the West, tending to prove the origin of typhoid *de novo*, a thing yet undetermined. In this epidemic sewage entered the water-supply, and as the writer saw a case of typhoid whose discharges had gone through that sewer, and as there were numerous other mild cases at the same place, the origin of our infection is quite evident. Two (Cases 6 and 10) were infected at Lame Deer, sixty miles from Custer, where there was considerable typhoid. The introduction of the above sewer was seriously protested, but it went in nevertheless, and it took just eighteen months to prove that the protest was just. In the meantime one man is dead—an unnecessary death.

Time of arrival at post.—The time at which the cases arrived at the post throws some light on the source of infection. For instance, Case 1 was taken sick one month after his arrival. This and a few others show the susceptibility of new-comers. Case 24 was a recruit of only one month's service, and Case 14, civilian, was taken ill only two weeks after he arrived; Case 24 two months, Case 11 three months, Case 30 four months and Case 9 six months. In every one of these cases malaria can be positively excluded, as quinin was not required and Widal's test was present and the course of the disease or its complications left no doubt as to the diagnosis; in only one (11) did the Widal test prove not conclusive. All the other cases had resided at the post over one year. Cases 2 and 5 one year, Cases 10, 12 and 13 one and one-twelfth years, Cases 21 and 26 one and two-twelfth years, Case 4 one and three-twelfths, Case 3 one and six-twelfths, Cases 7 and 20 one and eight-twelfths, Case 23 one and ten-twelfths, Case 8 two and six-twelfths,


Weeks. 1 2 3 4
Days 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Cases
2
Probably beginning of 3rd week
3
Death end of 3rd week of disease
No Symptoms in first 12 days
4
Abortive mild type.
5
Symptoms almost typical typhoid
6
Mild case of Streptococcus
Enteritis with Typhoidally Typhoid
7
8
Afebrile until end 2nd 3rd week
9
Beginning of 3rd week
10
Fever ends on indefinite time
← Three weeks of normal temperature →
11
sick ten days
Abortive type
12
sick four days
13
Chill 3 days previous. Temp normal
Abortive Type
14
Mild malaria two weeks
15
Treated for Pneumonia →
Afebrile type after second week with subnormal
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
1 2 3 4


5
6
7
Pyrexia
First evidence of tuberculosis
Subnormal temp. throughout
Pyrexia
5
6
7


Weeks 1 2 3
Days 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
16
Had been feverish three days
17
18
Was been sick two weeks
abortive type
Continued from 20
19
Had felt sick three days
20
Had been sick one week
Afebrile interval followed by severe relapse.
21
Had felt sick one week
Afebrile type and sub-normal fluctuations
22
Acute Tympanitis
Pain disappeared
Afebrile in 3d 4th 5th weeks
23
Had felt sick 3 days
Afebrile and abortive case
24
Had felt feebly several days
Afebrile interval 6 days
25
Felt sick two days
Abortive type and afebrile termination, sub-normal fluctuations
26
Sick one day
27
Sick two days
Afebrile in 2d 3d & 4th week, sub-normal fluctuations
28
Sick two days
Afebrile in 2d 3d & 4th week, sub-normal fluctuations
29
Had been sick about three weeks
30
Had been sick eight days
Almost afebrile throughout


4
5
6
7
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Continued from 18
Continued on 16
Sub-normal during convalescence
Continued on 18
Sub-normal during convalescence
Left hospital
Left hospital
Continuation of 29
Left hospital
Short relapse
Continued on 27

Case 28 three and nine-twelfths, Cases 19, 25 and 27 over four years, Cases 15, 17 and 18 over five years, Cases 16 and 19 several years and Case 6 fifteen years. Malaria can reasonably be excluded on this alone. In none of these latter cases could the infection have been received except here or at Lame Deer. They did not bring it from the East and it did not originate spontaneously.

Treatment.—Quinin was tried faithfully at first, but having no visible effect it was stopped as a waste of a good drug. Subsequent cases received no medicine except laxatives and stimulants when necessary. Diet was limited to milk, 180 c.c., every three hours day and night. It was well borne by every case, even by one man who claimed that he never could drink it. Broths were given as soon as the temperature began to seek the normal, and then there was a gradual addition of eggs and soft food. Meat was withheld until the temperature had been normal at least ten days, sometimes longer in the afebrile and subnormal cases. The cold bath treatment was carried out faithfully in every case. After some variation a rule was made to tub for fifteen to twenty minutes every three hours that the temperature was over 102.5 with water at 75 degrees. There was a reduction of temperature after the bath of from 1.5 to 4 degrees or even more in some cases; lack of nurses prevented an accurate record being kept of these observations. The earlier the commencement of treatment the milder the case as a rule. The number of baths required varied greatly. Twenty-six cases were ordered baths; but of these, five (Cases 9, 21, 23, 25 and 30) required none, three (Cases 10, 18 and 21) had one bath, Case 2 had three, Cases 13 and 15 had five, Cases 6 and 28 had six, Case 24 had eight, Case 27 had 10, Case 16 had eleven, Case 3 (fatal) had fourteen, Case 12 had twenty, Case 29 had twenty-one, Cases 7, 17 and 26 had twenty-two, Case 14 had twenty-four, Case 5 had twenty-nine, Case 19 had thirty-nine and Case 20 had fifty-seven.

Thermograms.—The temperatures were taken every two, three or four hours according as we had nurses to do it, consequently the thermograms are not uniform. They have been reduced in size so as to be easily compared and the curves explain themselves. On the charts four spaces are taken for each day and the records are so charted as to show the time of day, for instance, 6 A.M., noon and 6 P.M. being on the lines, while 3 A.M., 9 A.M., 3 P.M. and 9 P.M. being between the lines, and appropriate positions given to 4 and 8 P.M. This is to avoid writing the times for each record. Sometimes as many as twelve records are crowded into one day, but these show quite graphically the remarkable fluctuations which now and then occur. The rapid and sudden drops recorded are due almost entirely to the cold baths, for the temperature would sometimes remain down several hours after a bath. In the afebrile cases the curves show conclusively the sickness, for they are so different from the normal line eventually reached in every case. The highest daily record may occur at any hour of the day or night, and is not necessarily an evening exacerbation—indeed there may be two maxima one in the morning and one in the evening. In some cases, in the first week we may get the rapid fluctuations commonly found in the fourth week of ordinary typhoid, and this fact shows how a physician may be deceived in a case if he happens to visit it daily during the remission. He may find the temperature normal, yet right after he leaves it may be 104 or over.

Abortive cases.—What are called abortive cases may not be such at all, but the terminations of ambulatory cases which in the first two weeks gave no symptoms whatever. Thus Case 25 may be either a short attack or the end of a long one. In this case the chart shows an abnormal curve for twelve days after the fever left, and is identical with the termination of the longer cases. The subnormal fluctuations may be considered the usual course of typhoid convalescence, but in the short cases such as 24, it is possible for these fluctuations to represent an afebrile period in the third, fourth and fifth weeks of the disease and not the convalescence. These subnormal fluctuations, no matter whether they be considered either of the above, show that the heat-regulating centers are decidedly disturbed by poisons in the blood—and this is true even in case like 25 where the infection was so slight that fever lasted only three days. Surely an infection which disturbs these centers for two weeks is a dangerous and serious one. Thus Case 25 shows how little incommoded a man may be with typhoid fever, on the Western plains, carrying a dangerous infection to others, so slightly infected himself as to have no fever, and yet be several weeks in convalescing. An inspection of these afebrile thermograms leaves no doubt whatever of the illness of the patients—they are abnormal curves. These afebrile or abortive cases raise the suspicion that if all the abortive cases reported by Woodbridge and others be similarly investigated they will be found to have irregular subnormal fluctuations long after the fever leaves, proving that the infection lasts just as long as in the classic type of typhoid fever.

Dangers of Western fevers.—Nothing could show more conclusively the dangers of the mild Western fevers, and the utmost necessity existing to look upon them all as typhoids until they are proved to be something else, such as imported malaria. To try to discover new diseases in the West has failed before, because typhoid has not been excluded, and the sooner all such efforts are given up the better. It is indeed criminal not to take the view of the infectious nature of the disease and try to prevent further pollution of the waters, and to give these fevers any other name is only to blind us to the danger. Several years residence in Montana has proved to the writer the extreme danger of drinking water of unknown origin, and many a traveler has suffered for his temerity. It is almost a National question, for it is so important to travelers to protect them from harm. Investigation will probably show that all other fevers in the west which are now masked under other names are all atypical and therefore regular typhoids—for mild typhoids are almost always atypical.

The chief danger arises from the fact that the disease may last for so long a time without symptoms, Case 3 for instance. Far better would it be to have severe symptoms at first so as to compel confinement to bed. "Walking cases" are the worst here as in the East. Then again, walking cases are spreading the disease far and wide and in time will make the Western country as bad as the East, because in these arid sections the water supplies are so few and widely separated, and so surrounded by people and open to contamination, that universal infection of the rivers is possible.

It is time that we should also try to stop the nonsense about waters purifying themselves. No doubt sunlight and other germicides do destroy immense numbers of pathogenic organisms introduced with

sewage, and no doubt, also, that harmless hardy saprophytic bacteria natural to all waters destroy the organic matters introduced in sewege, but it takes time for this, perhaps many days or weeks, and only small quantities can thus be disposed of. Hence if feces enter a stream flowing at the rate of two miles an hour, in fifteen hours people thirty miles away are in danger of swallowing the filth with their drinking water, because destruction of feces by decay brought about by saprophytes is not accomplished in anything like fifteen hours. Again it is proved that if water is muddy, preventing the penetration of sunlight, typhoid bacilli will live much longer than if the water is clear. Indeed there are many causes at work, which may prolong the life of pathogenic bacteria introduced into the stream, so that they might be carried hundreds of miles. Self-purification of rivers in the course of time may be a fact, but it is a dangerous fact, because it gives the ignorant a false idea of safety. Some laymen even believe that five miles down stream from a sewer outlet the water has "purified" itself, even though the current is five miles an hour, the time limit never entering their minds. The new crusade now being carried on throughout the world is the only logical and rational one—a crusade against polluting water courses. These streams are public property of vital importance, and he who ruins that property is a criminal. The public should punish him just as severely as it would punish a man who would deliberately pour poison into a neighbor's well.

THE PARALYSES,

BY ONE OF THE MANY PARALYTICS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY SAMUEL KNOX CRAWFORD, M.D., LL.D.
CHICAGO, ILL.

To have studied paralysis from clinical phenomena observed in one's own body, and to have closely watched its varied and variable phases from a subjective point of view, is to have learned well a story which too few survive to relate.

To have suffered a grave lesion of a part of one hemisphere of the central ganglion, and yet to have been fully conscious of it all, and able to interpret the nerve disturbance and mental perturbation resulting therefrom, and to have been capable, conversely, of locating the lesion from the distal nerve phenomena, is to have enjoyed a rare privilege that none would seek, and to have passed an ordeal through which few pass and survive. Surviving, they seldom possess sufficient force and energy to attempt a formulated portrayal and deductive story of the ailment suffered.

The consensus of medical opinion is to the effect that to the subject it means simply the loss of motion and sensation, and that the conditions leading up thereto are but factors of the same disease. The lost mobility and perverted or lost sensibilities are but fragments of a colossal whole. Paralysis means greatly more. It means, in most instances, pain of a most excruciating character, and mental distress almost unbearable and altogether inconceivable to all but the sufferer himself.

An analysis of the pathology obtaining in the disease leads the writer to the conviction that it is simple, however complex and complicated its etiology may be and generally is. In all forms of the disease, in whatever dress it may present itself, there is disturbed nutrition at the central point of attack. The invasion is the result of a strangulation. In every case of the disease, without exception, from whatever original or remote cause, there is necrosis of medullary tissue. A thrombotic body is the central figure of every embolus, and an embolus or emboli form the essential condition of embolism. Embolism strangulates. Strangulation invariably results in necrosis. Necrosis of medullary matter will invariably result in paralysis of the parts supplied by the nerve trunks whose origin lie within the field of necrosed tissue.

Whatever the primitive step in the morbid process there is strangulation, the result of pressure followed by necrosis as a sequence. An endocarditis leaves a valvular insufficiency. Valvular insufficiency conduces to the formation of pedicular thrombi. A thrombus breaks its pedicle and cuts loose from its moorings and floats with the current of blood to the brain or spinal cord till it reaches an arteriole whose lumen is too small to admit of its free passage, and there it at once becomes engaged and an embolus is born and embolism begins. The volume of blood in the part is impeded, a blood clot is formed and death of tissue ensues.

When an electric battery has its generative function suspended there can be no current at the distal extremity of the conducting medium. Equally true is it, that when any part of the brain shall have had its nutritive functions impaired, interrupted or suspended, there can be no nerve force or current at the distal extremity of the trunk whose origin falls within the area of disturbed nutrition in exact proportion to the degree of disturbance. Neither can there be impressions received at the point affected from the periphery, save in the same ratio of the intensity and extent of the morbid action. Thus there is the chain of circumstances obtaining in paralysis complete. It would seem, therefore, apparent to the casual observer that when the initial symptom of brain clot appears, the physician's imperative duty is to circumvent further pressure and reduce if possible that which may have already transpired.

A blood clot in the brain, from whatever cause, always continues to increase in volume until a collateral circulation shall have been established, unless in some way the blood can have its intensity and forceful activity brought under subjection. The larger the clot, the greater the area of section of suspended nutrition will obtain, and the more extended, therefore, will be the phenomena of suspended function in distal parts. If when an embolism first occurs, as shown by the earliest phenomena, the force and activity of the blood current be subdued or modified, the least possible amount of pressure and the resultant strangulation, and therefore the least extent of necrosed tissue and its long chain of morbid phenomena will have been obtained.

Our own lamented Gross's "lost art," if employed at the beginning, would be the eminently proper remedy, and this to be supplemented by the employment of some well known and reliable cardiac sedatives or more properly speaking, nerve sedatives and cardiac depressants. After the circulation shall have been duly subdued, the work of promoting rapid absorption should be efficiently begun and prosecuted by every means at command. Prominent among these measures the writer believes the electric current to

stand first, and medicaments such as strychnia and cactus, to give force to the vasomotor powers of the fabric. It is possible for brain and nerve tissue to be renewed when once destroyed, and nature is quite willing and ever ready to begin the process of repair at once if she be properly assisted. She should be encouraged in her efforts by all known means. Hope, that greatest of all regenerative forces, should be established at once by all possible measures, and the will to do and live should be called into play. These two greatest of all recuperative forces are singularly overcome in all cases of apoplexy.

Suggestive hypnosis is no mean allied measure to employ in all cases of paralysis and should in no case be neglected. Memory may be, and sometimes is, either quite lost or perverted for a time; but on the contrary, it may be and often is quickened and even permanently brightened. In some cases aphasia is a prominent symptom, but in others the use of language is increased to a remarkable extent, and in a peculiarly interesting manner. Forgotten and long neglected languages have been recalled with astonishing clearness by not a few paralytics. The intellect in a general way is improved in some to a notable degree, in that the powers of arrangement and detail are made especially strong. The power of elimination, where never before in evidence, is in some made manifestly strong.

Can an apoplectic locate the lesion and pressure in his own brain by common sensations? Yes. Never was a boil in the axilla more easily located than was the pressure spot in the writer's brain by his common sensibilities. He could have guided the surgeon's knife to the exact spot where the clot pressure obtained, with as unerring a hand as he ever sought a ball in a soldier's brain. He longed and prayed for an opportunity for an object lesson in this.

Scientific surgery has a great work pending for the coming twentieth century, when it shall have left the pelvic and abdominal cavities and strayed higher where vitality rules in the thoracic and cranial cavities. One of the finest and first object lessons the writer ever enjoyed was that of the removal of bone, two and one-half by three inches, from the right parietal region of a 14 year old boy, through which stellated fracture fully half a teacup full of brain matter had escaped during the interim between injury and operation. This was in January, 1862, and in May, 1897, when last seen, the subject was a hale and hearty farmer, 49 years of age, who has enjoyed uninterrupted good health in every way since the operation, and has been eminently successful in his business enterprises. The bone has manifestly long since been renewed and there has been nothing in evidence to show that the lost medullary was not impaired. This refutes the somewhat prevalent notion that cranial bone once destroyed will never be renewed, and brain matter once lost will not appear again.

The Röntgen electric ray, which has so marvelously outdone opacity, is destined to play no insignificant part in the surgery of the thoracic and cranial cavities, and the day when a clot or abcess in the brain or thoracic viscera will be readily located and relieved, is not far away. The physician, too, must not be found loitering by the waysides of ignorance and superstition, and contenting himself with looking wise and scratching off, in his peculiarly fascinating way and hieroglyphics, a prescription for some remarkable placebo. He must bestir himself and feed the organism with foods proper for the rapid and certain nutrition of the brain and general nervous system, and study well the best methods of promoting the assimilative functions in any given set or class of organs. He must contrive to supply the proper substitute for the interrupted nerve current by the employment, in a scientific way, of the electric currents and by observing polarity and studying its laws, and must familiarize himself with dosage in the case of electricity as in the case of any other efficient and valuable remedy. He must take the measures of this imponderable agent with the same celerity and accuracy with which he would use the apothecary's scales, and then he will have less but better use for his urinometer and thermometer, and do much that he now leaves for the surgeon to accomplish. He must more carefully and critically study the stomach, the accomplished laboratory of the animal fabric, and learn to change an alkalinity to a proper acidity of this principal chemic mortar in the twinkling of an eye, by the polarized current.

If he do these things he will malign the poor old liver less and become less familiar with the word dyspepsia.

He will thus have learned a method of supplying nourishment for any organ or set of organs in the economy, through the natural and proper channel, to be assimilated, which is the last essential of the long chain of acts in the function of nutrition, beginning with prehension, which he never knew before. But he will supplement these suggestions by supplying more oxygen in the form of gas by inhalation, and oxygenated water by inhibition, than can be supplied by nature through ordinary channels and in the usual way. He must learn to fully understand that oxygen, the great vitalizing element as well as the supporter of combustion, which is after all the method which nature has devised for sustaining an equable temperature of this great thinking, talking, walking, working and living machinery of ours, is always in demand. He must learn to adopt nature's own plans and measures more than he now does; and if so he will have become more truly a practitioner of preventive and curative medicine, the highest function to which science may attain, and which conduces to the highest interest and hopes of humanity.

DISCUSSION.

Dr. LODER—Will Dr. Crawford give us a description of the sensations which proceeded and were co-ordinated with the lesion, as it might be some guide to us in locating such lesions and also in asking patients questions.

Dr. CRAWFORD—The feeling that I had about an inch and a half back of the right ear, deeply located, was very similar to a toothache. Total paralysis of the left side resulted. I had anesthesia and loss of sensation in the leg. The sensation was that of wedging in, and there was no sharp pain at the location of the trauma. For four months I had severe continuous pain throughout the side. The pain was most severe just below the left hip.

Dr. DERCUM—It is not impossible that there should be some sensation of a very generalized character noticeable by those patients whose consciousness is preserved. Neuritic pains rarely, but sometimes, occur in hemiplegics. Peripheral pain in hemiplegics does occur in some cases.

Request your Congressmen and Senators to fight the Caffery bill!

INTERNAL CEREBRAL MENINGITIS CHRONICA; NOTES ON DIAGNOSIS AND TREATMENT.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY ELMORE S. PETTYJOHN, M.D.
MEDICAL SUPERINTENDENT ALMA SANITARIUM.
ALMA, MICH.

The practical importance to both physician and patient, the seeming lack of appreciation of its frequency in the most unsuspected cases and the desire to emphasize the necessity of early recognition, diagnosis and active treatment of this always grave disease, are the considerations that have led to the presentation of this subject.

Specific infection is the common and chief cause of chronic internal cerebral meningitis, chronic meningo-encephalitis and the various forms of endarteritis and peri-arteritis. This poison is prone to attack the cerebral meninges and vessels, and these pathologic conditions are seldom found in the absence of this infection. Belonging, as it does, to that class of chronic affections whose phases and results extend over many years, this disease is nearly always produced by the luetic virus, which is one of the most energetic and surely operative known in the study of disease.

It is an undisputed fact that this specific infection is widespread and even increasing. Not only in Russia, Prussia, Portugal and the Sandwich Islands, is this disease as a constitutional malady found to affect directly or indirectly a large percentage of the population (endemic in 90 per cent. of the villages of the Novgorod, according to Ostroumoff, and 10 per cent. of all the patients of physicians of the Sartov Society), and according to the careful authoritative estimates for classic Berlin, one-tenth of the entire male population is infected; but at the present rate of increase of this calamitous disease in this country, the same estimate may soon apply to New York, Chicago and other of our large cities. While epidemics do not now occur, owing to our increased knowledge of the symptoms and treatment, individual instances of the transmission of this disease both by the immediate and mediate methods are multiplying.

By a careful study of the statistics from Hjelman, Diday, Hutchinson, Kassowitz, Fournier and others, it is estimated that of adult patients with this disease from 2.5 to 6 per cent. have the cerebral form, much less rare than Dr. Clouston would have us believe.

In general, the symptoms of chronic internal cerebral meningitis vary according to the situation and extent of the local lesion. It is conceded that the constitutional infection may give rise to an acute meningitis or meningo-encephalitis in the absence of any distinctive specific lesion that has been discoverable. The symptoms would then be the same as of acute meningitis from other causes. The diagnosis of this chronic or acute infection is very easy when you get the history of the specific lesion, sore, eruption or cicatrix or when exposure is known or admitted. But the absence of these or their oversight on the part of the patient makes the difficulty very great. Even the identification of the meningitic changes (postmortem) as the invariable result of this infection, according to Sternberg and Heubner, give us no aid in diagnosis. An external pachymeningitis may undoubtedly exist for years and possibly be congenital, without giving marked symptoms, and remain latent until by some exciting cause, such as acute disease, alcoholic excesses, over-study, anxiety and worry, the internal layer of the dura mater is reached and the soft membranes begin to show active symptoms of such inflammation.

It is at this time that we should be able to recognize the condition and by following the train of symptoms reach a correct diagnosis. The implication of the pia mater interferes with the circulation and nutrition of the cortex, and changes in the cerebral function make their appearance. At this degree of development of the disease the true condition is liable to be confounded with the functional neuroses, nervous prostration and even epilepsy, owing to the transitory nature of the focal symptoms. In the latent condition developed by the exciting cause, or anywhere in the entire course of the disease, from the first three weeks to twelve or sixteen years, these prolific changes, involving the meninges and blood vessels in the cord as well as in the brain, may manifest themselves in utter disregard of the arbitrary classification into "stages," which I believe to so intermingle as to make such classification inconsistent in most cases.

The single symptom common to all the rapidly variable and irregular features of this condition, is pain in the head, which may precede more pronounced cerebral symptoms by days, months or even years. While this pain may not seem to differ from headaches due to other causes, it can be discriminated. It may be referred to the frontal region, or to the one or the other parietal region, or even alternate. Since it is an expression of lesion of the meninges, it is more diffuse and more deeply seated than a pain dependent on a bony lesion or an ordinary neuralgia. A sense of weight or fulness, or tension with occasional explosions as if the cranium would split, are peculiar to this condition. There is an habitual intensity about it which is distinctly periodic. There are nocturnal exacerbations. There is obstinate insomnia unrelieved by anything save convulsion or paralysis. This symptom may last for years, may be better on arising or after food, but persistently returns with original or increased intensity. If there were no others, I should consider this symptom pathognomonic.

Sleeplessness prolonged and persistent, without any evident cause and unrelieved by hygienic measures or aught else save convulsions or paralysis, is an important symptom. Polydipsia and polyuria in the absence of sugar or morphologic elements are of great diagnostic value. Muddy whitleather complexion or marked anemia with 50 or 60 per cent. hemoglobin and less than 3,500,000 of red corpuscles are noticeable indications of this infection, especially if the hemoglobin and red corpuscles do not increase with exhibition of iron preparations. With these symptoms infection may be assumed. The peculiar psychic phase is extremely important. The patient in prime of life or younger is unable to read, loses interest in his business or the affairs of life, is indifferent to his own interests and inconsiderate of others; his intelligence is blunted or confused, he lacks power of concentration, makes errors in judgment, becomes irritable, easily excited and cross, is at times erratic, opinionated and peculiar. This accumulation of alteration of thought and conduct seems peculiar to meningeal inflammation.

There is usually inequality of the pupils and sluggish reaction or failure of response to light and accom-

modation. The optic disc reveals venous engorgement and the various stages of atrophy. There is a fleeting hemianopsia and reduction of the field of vision. There are focal epileptiform explosions both motor and sensory. Epilepsy may develop after 21 years of age, as in a case now under the writer's care. Aphasias or monoplegias in any form in young persons, developing suddenly or slowly, independently of any traumatism, with a tendency for any or all of these symptoms to improve spontaneously and relapse, belong to this condition. A combination of any or all of these symptoms may occur without any recognition of the infection on either the skin or mucous membrane and in the absence of demonstration of the etiology, that is, a recognized and acknowledged infection. With these clinical facts added to the above, specific infection may be affirmed.

In general, the prognosis is favorable when the disease is recognized before secondary sclerotic conditions have become permanent, which we know are beyond the reach of therapeutics. Cases where the onset is sudden are more amenable to treatment than where the commencement is gradual and insidious. As different persons react differently to the infection and respond differently to treatment, each case is separate.

The preparations of iodin have the power of influencing the specific products by resolution and elimination, but are not antispecific. The iodid of potassium should be given to the physiologic limit of toleration of the patient. While the sodium salt is at times better tolerated, it is a less powerful alterative. From 2 to 13 grams *per diem* of the potassium salt may be administered in hot water or milk, or in alkaline effervescing waters. In giving tentative treatment, the larger doses seem better tolerated in many cases, and create less disturbance than the smaller quantity.

Mercurial treatment should be instituted as soon as the diagnosis is established, be applied with great energy and carried out for three or four years, alternating the very active and mild courses at intervals of four weeks, according to the tolerance of the case. This disease should always receive a chronic course of treatment. Mercury alone seems to be regarded as the sole specific for the virus itself. It may be administered by the method of Hutchinson, hydrarg. cum creta gram 0.065, Dover's powder gram 0.065, four to six times daily; by the biniodid or proto-iodid in pill, or in the preparation known as mercauro, which often agrees best with the stomach and is a tonic besides. Where it is practicable I believe inunction to be the more effective means, as it reserves the stomach for the systemic tonics and nutritious foods so essential to the system undergoing such abundant tissue change for so long a period.

Grams 4 (daily for thirty treatments) of mercurial ointment rubbed slowly into the inner surface of the thighs, under the arms, on the sides and the chest, over the abdomen and across the lumbar region, selecting a different place each treatment, is the quickest, safest and best method of administration. The drug penetrates the subcutaneous tissue, is transformed into soluble albuminoids which destroys the power of the specific virus. It is then eliminated through the capillaries of the salivary glands and skin, and the mucous membrane of the mouth, stomach, liver, kidneys and bowels. On first sign of irritation in the mouth, as sponginess of the gums or ropiness of the saliva, the treatment should cease for a week and the patient should use a mouth wash containing a tincture of myrrh or rhatany.

Where there are indications therefor, when inunctions fail or can not be given, the corrosive chlorid, the most soluble salt, combined with urea gives excellent results. If calomel, which is less soluble, is thus given, symptoms of saturation may occur and continue, as it is impossible to prevent the further absorption of the remedy.

Then baths daily are serviceable for an active line of treatment as a means of hastening and encouraging the elimination of both the iodids and mercury from the body. Hydrotherapeutics as an adjunct to keeping the patient in better health is of advantage, in that more of the remedies can be given and eliminated in the same length of treatment.

Notwithstanding Dr. H. A. Hare's claim, that neither the meninges nor cerebrum are affected by the electric current, I believe galvanization of the brain to be a valuable adjunct to the treatment of this condition except in the acute febrile form. Eight to ten milliamperes of current can be safely used, and even more, to continue for fifteen minutes with a daily seance. A large sized electrode covered with amadou or chamois, made to conform to the shape of the calvarium, should be placed with the positive pole over the frontal region, and the negative electrode of the same size at the nucha. A tonic and alterative effect is produced by cerebral galvanism, improving the circulation and nutrition of the meninges and adjacent tissues.

The forced following of new lines of thought and forced action of the torpid brain stimulates the circulation and aids in elimination from the brain, as contraction of a muscle hastens tissue change of its substance. In the moderate elevation of temperature as found in exacerbations of this chronic state under treatment, saline laxatives, increased quantity of drinking water, lithia water and digitalis should be used. A cold water coil to the head or a cold head bath gives marked relief. Frequently a leg pack lasting an hour, or a hot bath of sufficient duration to dilate the cutaneous capillaries, with cold to the head at the same time, gives rapid results. The cases that follow were treated on the above principles:

Case 1.—Mr. O., male, aged 36; no history of specific infection but possible exposure ten years previously. Remained apparently well for seven years, and in April, 1891, had slight paralytic stroke affecting left side. Was abed three weeks and gradually nearly recovered use of left hand and leg. Again went about business, though mentally not so acute as formerly. In September, 1895, began to have grand ideas about himself, his business and other people. He quit business on his own account and went to visit relatives, thinking rest and change would restore him. On examination, found thickened hesitating speech with difficult articulation, unequal pupils; central paresis, lower facial nerve left side, no other branches. Patient could not read, from lack of concentration, nor write intelligently. Was headstrong, irritable, and suspicious. Had lost weight and was eating and sleeping poorly. There was active treatment after diagnosis of chronic meningitis; gained twenty-two pounds and improved in every way. Returned home but failed to continue medicine. Returned last May, and for three weeks, on resumption of treatment, improved somewhat slowly; afterward, began to lose use of sphincters; fell into semi-stupor and hebetude; acknowledged he had specific disease thirteen years before but concealed it. At the end of the sixth week he died.

Autopsy.—General cerebral meningeal thickening; no indication of fresh inflammatory action. Cranial nerves normal. Chronic endarteritis, anterior and middle cerebral vessels not complete; no occlusion nor thrombosis; no aneurysms nor hemorrhage; no gross macroscopic lesion of brain substance. No microscopic sections made.

Case 2.—Age 36; married. Good family history. Previous history of patient good. In 1886 had urethral stricture but disclaimed any infection. In 1891 acknowledges exposure to specific infection. Was treated three months homeopathically. Secondary symptoms not severe, and he attended to business until two years ago. He then complained of sharp shooting pains in left temporal region and whole side of the head. This continued for six months and was followed by hemiplegia on right side of the body, from which he recovered. The pain and headache then shifted to the right side of the head. This was followed later by numbness of the left extremities and formication of the entire left side of the body.

The headaches, which were of an explosive type, were so severe that they were only relieved by morphin hypodermically at regular intervals, being always worse at night and preventing sleep.

The patient was irritable, restless and nervous with general mental aberration. Appetite and digestion fairly good. After eighteen months continuous treatment on the above lines the patient recovered.

ANESTHESIA OF THE TRUNK IN LOCOMOTOR ATAXIA.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY CHARLES W. BURR, M.D.
PHILADELPHIA, PA.

Hitzig[1], Lähr[2] and Patrick[3] have described as a very frequent symptom in locomotor ataxia, a condition of tactile anesthesia occurring in the trunk, usually symmetrically situated on the two halves of the body, most frequent at the level of the nipples, and not bounded by the distribution of nerve trunks, but corresponding to the spinal roots or their intramedullay fibers. A series of ten cases recently examined by me agrees more or less with the conclusions drawn by these observers. In some, however, the condition found was different. I will not give the histories of the cases but ask you to accept my diagnoses. I will say, however, that none were recent, all being of some years' standing, all having quite marked ataxia, and none being paralytic. In the first case there was a band about three inches wide extending around the trunk at the level of the nipple in which though tactile and pain sense were well preserved there was marked confusion in the temperature sense, the usual defect being that he mistook cold for heat. In a second case there was no real tactile anesthesia but a partial analgesia, an inability to distinguish between touch and slight pain over an area about three inches wide on the chest in front of the level of the axilla and passing down on the inner side of the right arm to the elbow, and of the left arm to its middle third. Posteriorly, there was only a small area over the spine at a corresponding point, in which there was analgesia. At the level of the floating ribs on either side behind, was another small band of analgesia, and finally, in the left popliteal space a patch. There were no other sensory defects over the entire body.

In a third case there was a band of tactile anesthesia around the entire trunk and reaching from the umbilicus to the nipples. Within this area in front was a small irregularly rectangular area of total anesthesia.

In a fourth, there was a similar broad band from umbilicus to nipple and extending around the entire body, but there was also confusion of hot and cold and some analgesia, and a pin prick always felt warm.

A fifth case was typical, that is, involved touch alone, but the upper and lower boundaries on the two ribs did not exactly correspond.

In the sixth, there was not absolute tactile anesthesia, but from the nipple to the axilla and extending around the trunk and down the inner side of either arm, there was an area in which tactile sensation was much delayed. There was also delayed sensation on the outer side of the entire left leg and the right calf.

In the seventh, there was a longitudinal, rectangular band about two inches wide over the entire thoracic spine, in which there was tactile anesthesia. On the front of the chest there was a small area over each great pectoral at the level of the axilla, and on the left side extending down the inner aspect of the arm to the elbow.

The eighth case revealed in different parts of the body almost all possible sensory defects. The left lower leg was completely anesthetic in front except the toes On the right tibia was a large irregular area of total anesthesia. The forearms and hands were normal. Over the chest and from two inches below the nipple to above the lower border of the axilla and down the anterior aspect of both arms to the elbows there was tactile anesthesia. There was also tactile anesthesia over the anterior aspect of the right thigh. On the trunk temperature sense was normal, but in the legs even when not anesthetic there was confusion of hot and cold.

In the ninth case there was no tactile anesthesia on the trunk.

It must be accepted as proven that there occurs in locomotor ataxia such an anesthesia as Hitzig, Lähr and Patrick have described. I think, however, that it is not quite so frequent as their figures indicate, though my series of cases is far too few to draw conclusions from. How early in the disease it may develop is as yet unknown, but it may be present uncomplicated by other sensory defects very late. It may occur without sensory defects in other parts of the body. Its distribution, as Lähr says, corresponds not to the distribution of the peripheral nerves, but to that of the spinal roots or their intramedullary fibers, in which respect it simulates disturbances of sensibility following lesions of the spinal cord and the posterior roots. It is probably not characteristic of locomotor ataxia, but may occur in any local spinal meningitis. Fortunately its little use as a diagnostic feature does not greatly matter since locomotor ataxia is so unlike other diseases in which it may occur. It is of value in studying the natural history of the disease.

DISCUSSION.

Dr. HUGH T. PATRICK—I found the pain sense lost while the tactile sense was retained in a case of syringo-myelia examined not long ago. I think there can be no doubt about the diagnosis of syringo-myelia, although in the absence of a postmortem one would hesitate to be positive. In this case there was the trunk anesthesia extending along the inner surface of the arms, which has been described as typical of locomotor ataxia, with the exception that the loss of pain sense is in a zone considerably wider than the loss of tactile sense.

One of my reported cases of well developed tabes in which there was no trunk anesthesia, a case examined about a year ago, I have just learned has developed a well marked trunk anesthesia of this typical kind. I have since seen the same thing in other cases; indeed, in my first paper I mentioned that it had been found in other diseases and would probably be found in syringo-myelia. I saw this recently in a case which I think is not tabes but some acute lesion of the cord, and also very well developed in a case which I think was acute lateral sclerosis of the cord.

Dr. C. C. HERSMAN—I have found tactile anesthesia, or analgesia, a number of times, especially in specific cases. Since

[1] Ueber traumatische Tabes und die Pathogenie der Tabes im allgemein, Berlin, 1894.
[2] Archiv für Psychiatrie, Vol. xvii.
[3] New York Medical Journal, Feb. 6, 1897.

Gowers has placed the specific cases at 80 per cent. and only accounts for 10 per cent. of idiopathic, possibly we can say locomotor ataxia without specifying the pathology.

I have a case of specific trouble in which this analgesia is present. The patient has tactile sense but loss of feeling in patches.

Dr. HAROLD N. MOYER—Since the publication of the papers referred to I have examined seven cases and the symptoms were present in all. These are the only cases I have examined, with the exception of two children, one a very marked ataxic; both cases of Friedreich's disease; neither of these children has any of the zones of analgesia or anesthesia. I have observed it, however, in one case of well marked syphilis in the spinal cord, which would not be pronounced in any way an ordinary case of tabes; it was upon one side, and corresponded to a very marked paretic condition on that side.

Dr. CHARLES W. BURR of Philadelphia—I have recently examined two cases of Friedreich's ataxia, and there was no such trunk anesthesia present.

THE USE AND ABUSE OF ELECTRICITY IN THE TREATMENT OF THE SO-CALLED NEUROSES.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY L. HARRISON METTLER, A.M., M.D.
CHICAGO, ILL.

Of all the therapeutic measures employed to combat disease, electricity is probably the most abused. This is due partly to ignorance, partly to indifference. The extreme diversity of opinion in regard to it as an agent for good is ample testimony of the widespread ignorance concerning its powers. It is a fact that electricity is beneficial in the treatment of disease or it is not; it can not possess two dissimilar qualities at one and the same time. It is absolutely inconceivable that electricity should be at once perfectly neutral and most curative under similar conditions. Therefore, the differences of opinion held in regard to it can not be attributed to anything in the agent itself. The differences of opinion, must have their source in those who use the agent. The users themselves must differ either in their knowledge or in their methods of handling it. These assertions, I admit, are trite, but if their truth can be brought home to those who attempt to employ electricity, something may be gained in the way of more extensive positive knowledge and greater uniformity of opinion.

When one operator insists that all strictures can be reduced by electricity, and another says no strictures can be so affected, surely the electricity can not be at fault for that is presumably the same in both hands. The discrepancy lies with the operators. When Möbius of Berlin argues that the only positive effect of electricity upon a patient is of a mental, suggestive or psychic sort, and Apostoli of Paris teaches that solid fibromata may be made to vanish under the solvent action of the electric current, it is time for us to enquire wherein the methods and personal characteristics of Möbius and Apostoli differ; for, presumably, they have both used the same electric current—the only electricity known in this world—upon the same sort of pathologic conditions, and under corresponding circumstances. The question therefore becomes largely one of personal honesty and relative powers of interpretation. Many things appear different to different men, but if eletricity produces certain physiologic phenomena, such as muscular contraction, catalysis, cataphoresis and modification of local temperature, it is incomprehensible that these obvious phenomena should not be seen by optimist and pessimist alike. Surely, if muscles do really contract under electric stimulation, the patient as well as the operator can not honestly declare that such contraction is a sort of mental aberration or psychic hallucination. If chemic changes are really wrought in the fluids of the body by the poles of a battery, certainly the fact must be something more than a mere figment of the imagination.

It is universally admitted that electricity does produce certain manifestations in the normal tissues, these manifestations always being the same under the same conditions. I enumerate some of those physiologic actions upon which experimenters are pretty well in accord. They are to be noted as dynamic, electrotonic, thermic, electrolytic, catalytic and cataphoric. There are other effects less constant, and some, as Erb says, "that we may not now have even a suspicion of," but those I have mentioned are constant and apparent. As a mechanical irritant and as a chemic resolvent, electricity has undoubted force. Certain details and minutiæ in the manifestations of this force may at the present time be open to controversy, but that the electric current is not absolutely inert in its effect upon the body is admitted. It certainly does influence nerve currents, however that influence may be explained. Its electrotonic force diminishes or increases the transmission of sensory and motor impulses along the respective nerves, according to the ascending or descending direction of the electric current. Muscles do most obviously contract, whether the pole of the battery be applied directly to the muscular tissue or to the related nerves, and Pflüger's famous law in regard to these contractions is a positive scientific fact. Local anemia and hyperemia are, beyond dispute, caused by the action of the electric current. Chemic, mechanical and physiologic effects are most clearly discernible in the skin, as a result of the application of the galvanic current. The same may be said of its action upon the blood.

In addition to these particular activities, there is a whole series of manifestations produced by the dynamic effect of the direct application of the electric current to the brain, the spinal cord, the sympathetic nerves, and nerves of special sense, the sensory and motor nerves, the voluntary and involuntary muscles and the various glands and organs.

The functions and products of the secretory glands are modified by the irritative action of the electric current, sometimes being increased and sometimes diminished according to the kind and quantity of electricity used. Simple observation shows that the blood is affected by the current and that clots are formed while hydrogen and oxygen as well as acids and alkalies are evolved at one or the other electric needle immersed in the blood stream. The local effects upon nutrition are apparent enough to any unprejudiced observer and are to be noted as mechanical, physic, chemic and physiologic.

It is not my desire to refer more minutely to the great subject of electro-physiology. I wish merely to emphasize the fact that there are electro-physiologic phenomena, and to consider how these effects are to be utilized in the treatment of a special class of diseases.

Why is electricity as a therapeutic measure so misused? Many reasons might be suggested, but most of them would come under the head of ignorance or indifference. The expense of a complete electric out-

fit and the trouble of applying the agent are two important hindrances to its universal adoption. It is easier and less expensive to write a prescription than to give an electric treatment. To tell a patient to purchase a "family" battery and to hold the electrodes in the hands while "the current is flowing," is about as sensible as to tell him to go to a drug store and take "some" strychnin as strychnin is a good "nerve tonic." Not to know when and how to employ the galvanic instead of the faradic current, reveals about as much knowledge of electro-therapeutics as not to know when and how to administer belladonna. Far too many practitioners do not distinguish between the various currents, galvanic, faradic and static, in their applications. It is all electricity, they loosely argue, and if the patient is not benefited by the form of electricity which has been administered, they conclude the agent is of no value. Again, they do not measure the dosage of the electricity given, but too often depend upon the feelings of the patient. In some varieties of disease the electric current works deleteriously if it is so strong as to cause the patient to be conscious of it. It is a mystery, therefore, how in such cases the electricity is to be administered with any sort of intelligence, if no measure of the dosage is employed. I have occasionally known the practitioner to first try the current upon himself and depend upon his own sensibility as a guide to the administration of the agent to the patient. One might as well exhibit quinin or opium to oneself with no thought of human idiosyncracies or differences of constitution as a guide for the exhibition of the drug to the patient.

Human nature is full of prejudices and more than once have the slower results obtained by electricity in certain cases been frowned on because of the more brilliant and rapid effects produced by surgery. All prejudice aside, however, it is a fact that in many of the neurotic affections—especially the neuroses—electricity is the curative agent *par excellence*, and while there is less *éclat* associated with it than with a surgical operation, it accomplishes its results without mutilation. So careful and conservative a clinician as Erb of Heidelberg says that "electricity is an extremely powerful and many-sided remedy and that more evident and undoubted curative effects may be attributed to it in diseases of the nervous system than to almost any other remedy. I am not guilty of exaggeration when I say that the curative effects not infrequently astonish even the experienced physician by their magic rapidity and completeness."

And yet there are grave difficulties encountered sometimes in the treatment of these diseases with electricity. They are largely, however, diagnostic and pathologic. Everyone admits that, physiologically, electricity stimulates nutrition. Naturally it follows that in those troubles in which diminished nutrition is the principal factor, electricity should play an important rôle therapeutically. Here is where much of the differences of opinion in regard to the value of electricity have their origin. What are the nutritional diseases and how can they always be accurately diagnosed?

Again, it is recognized that physiologically, electricity manifests a certain amount of catalytic power. Most rational would it seem, therefore, to employ this agent in the treatment of those conditions, like tumors, in which a dissolution of the tissues and fluids is desirable. But who will always and positively tell what conditions are amenable to this solvent force? Obviously we have many things to learn, and it is undeniable that electricity, like a host of other therapeutic agents, must to a large extent be used empirically. It behooves us not to condemn a measure which empirically is shown to be beneficial merely because we do not fully understand the pathology of the diseases in which its grand effects are so apparent.

A neurosis or functional disease is one of the enigmas of medical science. All that we can say is that the tissues and organs involved are functionally perverted, which is nearly equivalent to saying nothing. Many of the so-called functional troubles are purely reflex in character. Sometimes we can discover the distant organic lesion that is the prime cause of the reflex disturbance; more often, however, this final cause remains undiscovered or is found only after the patient has been subjected to a number of mutilating surgical operations. And in very many cases the functional trouble remains after all supposed organic lesions have been removed. Who has not seen cases in which ablation of the ovaries for epilepsy or insanity has failed to accomplish the desired result? Not always does a circumcision put a stop to a chorea or the fitting of a pair of glasses remove a headache. It is well that these operative procedures should be done when needed to clear up strong presumptive evidence that the organic lesions are the source of the neurotic troubles. Other measures, however, should always be given a thorough trial before any such radical methods are instituted. The ultra-mechanical treatment of such conditions as dysmenorrhea, neuralgia, vaginismus, epilepsy, seminal incontinence, intestinal constriction, etc., is not always successful even when most radically undertaken. To argue that an operation is always radical is no argument against trying other measures first. Radicalism is not always effective and too often transcends the limits of what is judicious and necessary. There are men who propose the production of abortion as a radical cure for severe vomiting of pregnancy. By the same process of reasoning these men would probably declare for amputation of an arm for a painful neuroma. Medicine should conserve as much as possible, and for that reason heroic measures should always be approached gradually and only as a last resort. Since therapeutics is only a means to an end and not the end itself, the harsher the means the more reluctantly they should be adopted. If a neuralgia can by any possibility be alleviated by electricity, no argument on the ground of radicalism can console a patient for a surgical mutilation.

There is a large class of neuroses in which the cause of the trouble seems to be inherent in the tissues themselves. The best explanation we can offer of their pathology is that they are the result of impaired nutrition. The chemic or molecular state of the nerve cells is in some way at fault. Perchance this is brought about by a local vasomotor irregularity or by some inherent defect in the metabolic functions of the cells themselves. If the circulation is not what it ought to be, the pabulum carried by the blood to the nervous structures will be deficient or in excess, and these structures will be starved or overnourished. On the other hand, if the cells themselves are wanting in tone so that the pabulum is not normally assimilated and metamorphosed into their own chemic or molecular condition, these structures will not functionate as they should, but give rise to a so-

called functional disease. There may be, and in some instances undoubtedly are, irritants and toxins in the blood that exert a deleterious influence upon the delicate nerve cells so as to modify their functional activities. Many cases of chorea are due to the uric acid diathesis, while not a few mental symptoms are believed to be caused by a toxic condition of the blood. Even in these cases, however, the essential trouble in the histologic structures is largely nutritional, whatever the nature of the prime cause may be. All this class of cases, the so-called neuroses, are therefore especially amenable to electric treatment. Hysteria, insomnia, spinal irritation and nervous exhaustion are always immensely benefited by the electric treatment when it is properly administered. When I see, as I have in many of these cases, an improvement in every symptom, an increase of body weight, a reawakening of the appetite and a more natural performance of all the bodily functions, I am at a loss to understand how such results can be attributed solely to the mental impression or psychic influence excited by the electric current. I can as easily believe that a brick wall may be raised by the practice of hypnotism upon it by the master mason as to believe that such physical manifestations as restored digestion, circulation and restored functions of all sorts in a neurasthenic are the result of a kind of electro-hypnotic influence. I would have to convince myself that electricity does not really stimulate, does not irritate, that in fact it is physically absolutely neutral in its effects, local and general, while the patient's mind alone brings about all the wonderful changes in the activities and appearances of the bodily tissues. No, the psychic theory in regard to the power of the electric current is not only irrational and illogical, but it is emphatically opposed to most observable and tangible facts. I am not over-enthusiastic when I say that in the treatment of the neuroses electricity is the sovereign remedy. In selected cases it accomplishes most favorable results, as I could easily show from my case-book. Whether the influence of the electric current upon the nutrition be the sole explanation of its *modus operandi* or whether in addition to its electrotonic, catalytic and cataphoric properties, it possesses other more subtle powers, is a matter of small consequence in discussing the reality of its effects in the treatment of the neuroses. Because it is so powerful an agent is the very reason why it provokes such a diversity of opinions. Electricity is not a panacea even in the treatment of the neuroses, its most favorable field. In accordance with our present knowledge only that class of cases in which nutrition is primarily at fault call for it. As I have already indicated, certain neuroses are mere reflex manifestations and while electricity may benefit them for a time, it can not be expected to produce a cure until the original cause of the reflex is removed.

A young woman was recently referred to me who had been treated for three months by a gynecologist, on the theory that her neurotic symptoms, which were most distressing, might be due to some pelvic disease. Showing no improvement as a result of the local treatment, she took electricity, baths, massage, etc., and persisted in the general treatment greatly to her benefit. She was an orphan, of a naturally sensitive nature, overwhelmed with financial troubles in connection with her estate, and uncertain as to the future of her life. All these factors had combined to institute a train of neurotic manifestations such as insomnia, restlessness, irritability, loss of appetite, nervous dyspepsia, weakness of memory, want of the power of concentration, fugitive pains, backache, etc. Examination of the pelvic organs, by myself as well as by others, discovered no pelvic trouble whatever. I was surprised that the simple history of this case did not have more influence in the diagnosis made by the gynecologist, but when I found no disease whatever of the pelvic organs, I naturally had my suspicions in regard to the honesty or ability of her attendant. Another case sent to me was that of a young woman who had received much electric and anti-hysteric treatment near her home, without apparent benefit. She was herself to blame in this instance, in having been unwilling to submit to a vaginal examination. This examination, made by myself and by another, on account of her persistent backache, leucorrhea and dysmenorrhea all coming on shortly after a severe fall, revealed a pronounced retroflexion of the uterus with chronic endometritis. In such a case electricity was naturally without benefit to the neurotic condition except temporarily. Three months' treatment here for the pelvic trouble sent the girl home well, happy and grateful.

I have related these two well marked contrasting cases to illustrate the use and abuse of electricity. I could give others, even more in detail but mere repetitions consume time without adding information. A correct diagnosis is an absolute *sine qua non* in the proper administration of electricity. Too often, however, it seems that with some practitioners the more obscure the diagnosis is, the greater the need for electric treatment. If a paralysis or a neuralgia, for instance, can not be assigned to a definite cause, then as a last resort electricity is tried. I think I am not far out of the way in saying that when a set of neurotic symptoms remains unrelieved by the application of the electric current, the practitioner, to be honest to himself and to his patient, should conclude that his diagnosis is wrong and that his therapeusis is being misapplied. The supposed neurosis is in all probability a reflex of some sort, and calls for other treatment than the electric. More than once have I had headache cases come to me in the hope of being benefited by electricity, while a most superficial examination indicated some form of eye strain. I must frankly state, however, that I have had not a few cases which had been fitted with glasses, return to me with no modification of the old headache, until a more thorough course of general and electric treatment had been instituted. Neurologists are acquainted with such a condition as pain habit, and in lieu of a better explanation I find I have to attribute some of these pains to such a habit.

In the electrical treatment of the neuroses, I find that a combination of galvanism and faradism gives the happiest results. I use a galvano-faradic apparatus. In galvanization of the spine and general muscular faradization, I have the patient remove all clothing and lie on a couch, without exposure, under a large sheet. Sponge electrodes about five inches in diameter, having convenient handles attached are used. At first, with the small, ordinary hand electrodes, one at the nape of the neck, the other over the sacrum or epigastric region, the spine and sympathetic system of nerves are galvanized for four or five minutes. The feeblest possible current is used, the strength never being greater than is just sufficient to cause a slight metallic taste in the mouth. By measurement

it should not be more than from five to fifteen milliamperes. At this stage of the treatment the patient usually declares that he feels a decided local warmth at the negative pole. While maintaining the electrodes in their respective positions, the current is reversed some five or six times with the current reverser of the battery.

With the larger sponge electrodes general faradism is applied to every part of the body. One pole is placed at the nape of the neck or under the sacrum, while the other is passed successively over all the muscles causing in them a gentle but decided contraction. Many patients are over-sensitive, and in such it is advantageous for the physician to hold one pole of the battery in his left hand while he uses his right hand to administer the electricity with a gentle massage to the patient. This is more tiresome to the physician, and fortunately is necessary in only a small percentage of cases. I have used the method many times without feeling any bad effects from the electricity passing through myself. The advantages are that the physician can control the strength of the current better and a sensitive, nervous patient is not annoyed by any sudden shocks. While the spinal galvanism should not be prolonged beyond five minutes, as a rule, the general faradism is gradually increased in strength and time until the latter is an hour and the former produces almost painful contractions of the muscles.

In selected cases this simple method of administering electricity affords, after a few seances, a grateful feeling of rest, sleepiness and well being, which continues until in the end the whole constitution partakes of the improvement, and the patient looks and feels once more like a normal being. If after the first two or three applications a restful feeling and a desire for sleep are not experienced, the physician's suspicions should be awakened. If a condition of over-excitability is produced he may be quite certain that his diagnosis is wrong, and the case is one not amenable to electric treatment.

With a proper knowledge of the qualities of the electric current, with more care in the making of the diagnoses and the selection of cases, and with an intelligent scientific application of the agent, electricity, in the treatment of the neuroses ought not to be abused as much as it is, but it ought to be used with a degree of success that will award it its due place among our therapeutic resources as one of the most powerful and effective in the conflict with disease.

4544 Lake Ave.

A CASE OF LOSS OF BLOOD FROM THE RECTUM DUE TO MUCO-MEMBRANOUS ENTERO-COLITIS, AND TWO OF LEUKEMIA.

Clinic delivered at the Jefferson Medical College Hospital.

BY H. A. HARE, M.D.

Professor of Therapeutics and Materia Medica, Jefferson Medical College of Philadelphia.

PHILADELPHIA, PA.

The first patient is a man of 23 who is somewhat thin and anemic, and whose face shows the signs of mental depression and lack of nervous energy. His history is, that he was in perfect health until about two years ago, when he was suddenly seized with a severe hemorrhage from the bowels, the blood being quite bright in color. He tells us, however, that he has had no diarrhea at any time, but on the contrary suffers from obstinate constipation. There is nothing in his history which points clearly to the cause of these bloody movements, which have continued from time to time, generally once or twice a week ever since he was first taken ill. The frequent loss of blood has resulted in general debility and anemia. He tells us that an examination of his passages not only reveals blood but a large amount of mucus which appears in shreds or stringy masses. He often has much griping pain and flatulent distension, his appetite is variable and his diet is an irregular one because he is afraid to eat certain articles lest they produce an increase in his discomfort. Every few days he is seized with an attack of looseness of the bowels which seems as if it were an effort upon the part of the bowel to get rid of an excessive quantity of mucus and feces which have accumulated. His urine is normal.

When a case of hemorrhage from the bowels comes before you, the possibility of it arising from a number of different causes at once enters your mind. First, it is possible and most probable in such a case that the hemorrhages come from hemorrhoids, but the man tells us that he has no sign of any congestion of his hemorrhoidal veins. This does not, however, prove positively that the blood has not this origin, for the most severe cases of bleeding from the rectum are seen in those persons who have no large dilatations of the hemorrhoidal veins, but in their place have small arterial twigs in a dilated and hyperemic state and these little bunches of vessels containing arterial blood, when scraped or eroded by fecal matter give free vent to little arterial spurtings. A careless examination of the rectum might result in their being overlooked, but a careful examination with a speculum will often reveal their presence.

Relief may be obtained by touching them very lightly with the tip of a fine glass rod dipped in nitric acid, the resulting scar puckering the blood vessels and preventing further hemorrhage, or in other cases an application of nitrate of silver or of dilute nitric acid for its astringent effect does equally well. I have had this young man carefully examined, however, and the report is that there is no sign of such bleeding points and we have therefore to look further for the cause of his trouble. Is it possible that the blood arises from a duodenal ulcer? I think not; for first, duodenal ulcer is a rather rare condition, and second, the blood which comes from such an ulcer is nearly always dark and tarry, through the action of the digestive juices of the bowel upon it, whereas the blood this man passes, he tells us, is quite bright and arterial in hue. Then, too, he has no pain in the neighborhood of the duodenum; such as is usually felt when ulcer of this portion of the alimentary canal is present and, finally, the blood is not well mixed with the fecal matter, but is well separated from it in the movements, although if it arose in the small intestine we would expect it to be thoroughly mixed with the stools. On the other hand, duodenal ulcer is far more frequent in males than in females. I think for the reasons given we may exclude the possibility of the blood arising from an ulcer in the duodenum.

The next cause to be thought of is cirrhosis of the liver. This condition, as is shown so well in the illustration of the results of cirrhosis of the liver in my book on "Diagnosis," results quite frequently in grave engorgement of the various abdominal viscera,

so that we frequently have hemorrhages from the stomach as the result of the enlargement of the gastric and esophageal veins and of the chronic catarrhal condition which results. Similarly it might be possible to have bloody movements from this cause as the result of the interference of the abdominal circulation and particularly from congestion of the hemorrhoidal plexus, but he has no history pointing to that most frequent cause of cirrhosis, alcoholism, nor does physical examination reveal any signs of this slow pathologic process in the liver. I think we may, therefore, exclude the possibility of the cause of his hemorrhages being hepatic cirrhosis. That he is not suffering from hemorrhages arising from old ulcers remaining after typhoid fever is proved by the fact that he has no history of this disease. He is, however, a markedly neurotic patient and the fact that he has these peculiar stringy movements, that he suffers from constipation with marked intestinal discomfort and with occasional attacks of diarrhea and from various spots of tenderness in the abdomen, which are not constant, leads me to conclude that he is suffering from ordinary muco-membranous entero-colitis. In some of these cases actual membrane seems to be passed from the bowel, but in the majority of them thick, tenacious strings of white mucus are passed with each movement. The proper treatment for this man is to institute, as closely as possible, what is known as the rest-cure treatment, which by improving the conditions of his nervous system, will indirectly cure this condition. His constipation must be overcome by the use of proper laxatives, such as cascara sagrada, to which may be added small quantities of lobelia to increase intestinal secretion, or if he has an attack of diarrhea this must be controlled by proper remedies. He must have a nourishing diet, which should be, however, free from potatoes, beans and similar articles which cause fermentation and the development of large quantities of wind in the bowel. Milk should be given him very cautiously until we are sure that he can digest it. In addition to this treatment his digestion should be aided by bitter tonics, by the use of pancreatin or pepsin, and, almost as important is the rest-cure. He should receive high injections of as hot water as he can bear, in each two liters of which there should be placed about 1.3 grams of the sulphocarbolate of zinc. Should no diarrhea be present we may place in the hot water from 2 to 4 grams of boric acid. His buttocks should be elevated before the injection is given, the fountain syringe should not be raised more than eighteen inches or two feet above the bowel, in order that the water will enter the bowel very slowly, and this treatment should be given at first every night and afterward at least three times a week. During the periods of his constipation gentle massage of the abdominal area may be carried out with great advantage, but it will have to be most gentle, particularly when it is first employed.

The other two cases are very much more important; they represent that not very common condition known as leukemia, or as it was formerly called, leucocythemia. In an earlier clinic I showed cases representing ordinary anemia, chlorosis and pernicious anemia, in all of which conditions the variations in the blood depended chiefly upon alterations in the character or number of the red blood corpuscles. These cases, however, represent but little change, comparatively speaking, in the red corpuscles, and very marked change in what are known as the white corpuscles or leucocytes.

The white blood corpuscles appear in several forms: first, we have the small white blood corpuscle, scarcely as large as the ordinary red corpuscle, which is called a lymphocyte; this has a very large nucleus, which so completely fills the body of the corpuscle that there is no free protoplasm to be seen around its margin. Next we have what is known as the large mononuclear leucocyte, a corpuscle considerably larger than the red corpuscle containing a large single nucleus which is surrounded by an area of transparent protoplasm. Next we have a white corpuscle known as a transitional leucocyte, in which the nucleus of the large mononuclear leucocyte looks as though it were undergoing some transitional change in its shape and character. This corpuscle is not, however, exceedingly important in diagnosis. Then we have what is known as the polymorphous or polynuclear leucocyte, a white blood cell which, as its name indicates, contains either several nuclei or a nucleus of very irregular shape (polymorphous). This corpuscle contains in its protoplasm a number of fine granules which take certain neutral stains and are therefore known as neutrophiles. In addition we find in normal blood another white blood corpuscle, generally polynuclear in character, in the protoplasm of which may be found large granules, much larger than those just described, which readily take an acid stain such as eosin. They are called eosinophiles. At one time the presence of those cells was considered of importance in the diagnosis of leukemia, but they are now considered not so important. These, then, are the white corpuscles which are found in normal blood. What are the changes which we find in leukemia? Before I describe them I must recall to your mind that we have two forms of leukemia; first, spleno-medullary leukemia, which is by far the most frequent type. In this disease we have great enlargement of the spleen and liver and marked pathologic changes in the medulla of the bones and, as a result of these changes, it is supposed that we have developed an excessive number of large mononuclear leucocytes, and at the same time another white corpuscle not found in normal blood is seen which appears as a myelocyte, a corpuscle of very large size with a very large staining nucleus, usually situated toward one side of the cell and in the protoplasm of this corpuscle are to be found numerous fine granules. The presence of these two corpuscles and the mononuclear cells in excess and the development of the myelocytes affords us strong evidence of the presence of spleno-medullary leukemia, particularly if we find in association with these signs the dyspnea of anemia, the pallor, retinal hemorrhages, possibly hematuria and the marked enlargement of the spleen which are so characteristic. The older of these two patients presents just these signs and symptoms. An additional sign of leukemia may be, perhaps, considered in the marked decrease in polynuclear leucocytes which are present, and this enables us to separate leukemia from other cases in which we simply have excessive leucocytosis, because the polynuclear leucocytes are those which are increased in excessive leucocytosis but decreased in leukemia. Repeated examinations of this man's blood show the following changes: September 30 he had 2,458,000 red corpuscles, 28 per cent. of hemoglobin and 368,750 white cells, the proportion of white to red being 1 to 6. Two months later under ascending doses of arsenic his hemoglobin had risen to 50 per cent., his red corpuscles, however, numbered only 2,048,000, but

the white corpuscles had been decreased to 93,750, or 1 to 23.

Today his hemoglobin equals 63 per cent., his red corpuscles 4,000,000 and his leucocytes only 19,000. The proportion therefore is 1 to 210, which approximates the normal proportion very much more closely than the earlier count. The blood also shows that the myelocytes are present in the proportion of from 8 to 13 per cent., and it is a noteworthy fact that his polynuclear leucocytes, which are usually decreased in this disease, amount to from 51 to 66 per cent., which is about the number usually found in normal blood. His spleen is found to be greatly enlarged. It extends almost to the anterior superior spine of the ilium and in the middle line as far as the umbilicus, but his color has greatly improved and there are many men who would appear far more anemic than he, although they would consider themselves as being in perfect health.

The second case is far more interesting because much more rare, representing as it does a case of possible lymphatic leukemia. It is that of a young man of 23, a barber by occupation, who is intensely pale and yellow looking. An examination of his chest and arteries shows loud anemic murmurs, his spleen is enlarged to even greater extent than the patient first brought before you and we have records of his blood over many months. October, 1895, an examination of his blood showed that his hemoglobin was 30 per cent., his red blood corpuscles 2,060,000 and his leucocytes 8000. He has been in hospital off and on since that time and we have a great many counts of his blood. His case is not a typic one, but I think we can say that it is one of lymphatic leukemia. At the present time his hemoglobin is 33 per cent., his red corpuscles the same as before and the leucocytes 6200. While the red corpuscles are somewhat decreased, as they frequently are in leukemia, the white blood corpuscles are not increased as is usual; indeed, this proportion between white and red is often seen in health. It is only when we consider his various corpuscles that we have much light thrown upon the diagnosis. We then find that his lymphocytes, which are ordinarily present in comparatively small numbers, amount to 84 per cent., that polynuclear leucocytes, which usually make up a large proportion of the white cells, only amount in this patient to 8 per cent., while the mononuclear leucocytes amount to 4 per cent. There is also absent in his case one other frequent sign of lymphatic leukemia, namely, very great enlargement of the lymphatic glands all over the body. This boy has no such enlargement, but his lymphocytosis, combined with his profound anemia, the fact that he has had hematuria, that he has hemorrhages in his retina and that he is intensely anemic and pallid without a corresponding loss of flesh, seem to make the diagnosis fairly clear.

In many of these cases of leukemia we find in addition to a decrease in the number of red corpuscles, an abnormal red blood corpuscle which possesses a nucleus, this corpuscle being called a normoblast and sometimes also possessing ameboid movement. In the presence of a patient suffering from multiple enlargement of the lymphatic glands, a symptom which this boy might present, it would be incorrect for you to jump to the conclusion that he was suffering from lymphatic leukemia, because a similar enlargement is seen in what is known as Hodgkin's disease or pseudo-leukemia and multiple tubercular infection.

The treatment given these patients has been a nourishing diet, the meeting of current symptoms which have seemed of most importance, and ascending doses of arsenic until they reached the physiologic limit of the drug.

FIVE CASES OF CHOLELITHIASIS.

BY BAYARD HOLMES, M.D.,

PROFESSOR OF SURGERY IN THE COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO, THE MEDICAL SCHOOL OF THE UNIVERSITY OF ILLINOIS.

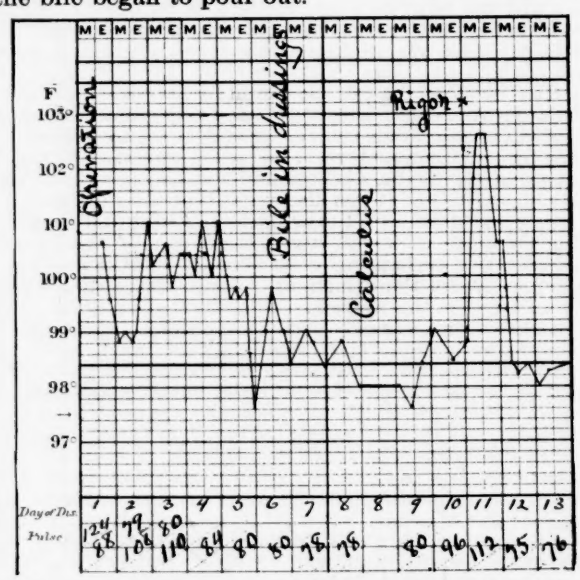
The following cases are reported because each of them contains at least one point of real surgical interest:

Case 1.—Indistinct pain in the abdomen, with sick headache; the morphin habit; empyema of the gall bladder; cholecystostomy; recovery. The patient was a physician, 45 years of age, who came to Dr. Waugh's sanitorium for the treatment of the morphin habit. He was of very regular habits, used no tobacco or alcohol and had no significant previous history. He had indistinct pain in his back and abdomen for several years and was accustomed to take small doses of morphin to relieve this distress. These doses increased, however, in frequency and size until he found himself, under one pretext or another, taking larger and larger doses, up to 0.45 or 0.52 grams a day. He was bright and had been able to follow his practice, which was large and diversified. On coming to the sanitorium he stood the treatment well for a week or two, when without apparent cause and without any very great increase in this indistinct pain in his back he gradually began to have an evening rise of temperature, with some sweat. At length symptoms of peritonitis, distension of the abdomen and tympanites appeared, and it was discovered that his right abdominal region was filled by a tumor six inches long and three or four inches wide. It was so large a tumor that it was at first looked upon as a peri-appendicular abscess. In the course of twenty-four hours the symptoms were so grave that I was called in to open the abscess. This was Dec. 16, 1893. The patient at this time was only partially conscious; his abdomen was slightly tympanitic; the bowels had been freely moved by an enema; the patient's temperature was 102, his pulse 120. He had never had any paroxysmal pain, but complained of a deep pain in the back, which was relieved by the use of morphin. In examining the eyes the pupils did not show the effect of the morphin; the tongue was coated typhoid-like; the lips dry and parched; the skin hot and dry; the respirations rapid and superficial, as in peritonitis; the heart's action was perfect, but rapid; the abdomen was slightly distended, and in the right side was found a tumor, round, smooth and pressing up against the abdominal wall, which tumor I readily recognized as a greatly distended gall-bladder or possibly a pyonephritic tumor. His urine was examined and found to contain a trace of albumin and was otherwise highly concentrated. He urinated voluntarily. The case was considered one of great gravity, and an immediate operation was undertaken. The abdomen was opened by an incision along the outer border of the right rectus muscle two and one-half inches long. The tumor showed itself in the wound unattached to the viscera. The first effort, however, to examine it resulted in rupture of the sac and the discharge of a large quantity of thick pus. The walls of the tumor were instantly grasped in several pair of forceps and the tumor pulled out into the wound. By means of several silk sutures, it was attached to the margins of the wound and the edges were trimmed off, making a large opening into the gall-bladder. The finger was passed down to the cystic duct, but on account of the necrotic condition of the sac it was considered unadvisable to make any attempt to sound the cystic duct.

During the following twenty-four hours the temperature fell to 99 and rose again at the end of the second day to 101, after which it gradually declined until the twenty-fifth day. Upon the eighth day the stone appeared at the mouth of the wound and was with some difficulty removed. It was half an inch in diameter and about an inch long, being pear-shaped and having a facet at one end, showing that another stone had been in contact with it. This was dislodged a few days later. The patient made an uninterrupted recovery, with one exception. On the tenth day after the operation the usual irrigation of the wall of the gall-bladder was undertaken by the nurse, but the mouth of the fistulous opening into the gall-bladder had now become so small that the irrigator point did not allow a free return of the water from the cyst, and as a result the water probably flowed through the cystic into the hepatic duct and carried back with it the pus from the gall-bladder. The patient complained of a sudden dreadful pain, quickly went into a collapse

from which he was with difficulty revived, and in the course of a few hours he had a pronounced chill and a rise of temperature to 103 degrees, as represented in the chart. This was unaccompanied, however, by any symptom of peritonitis, and upon the following day the temperature fell to normal and never rose after that time. This is shown by the accompanying chart. In the course of a few weeks the fistula completely closed, but it required a secondary operation to remove one of the silk sutures, which had been too hastily placed during the emergency of the first operation in an inaccessible position.

This case illustrates the fact that a stone may give rise to severe disturbance and nervous unrest and distress which can not be characterized as biliary colic, and may even initiate the morphin habit in an otherwise healthy and well-balanced man. It also shows the danger of irrigating the gall-bladder after the obstruction in the cystic duct has passed away. In this case the irrigations were begun on account of gangrene of a large part of gall-bladder, but I thoughtlessly neglected to give directions that the irrigations be stopped as soon as the stone was dislodged and the bile began to pour out.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Case 2.—Impaction of a stone in the cystic duct for five years, with attacks of pain and vomiting at intervals of two or three months, each lasting a day or two. Relief from all symptoms for five years. Impaction of the stone in the middle of the common duct; rupture of the common duct, removal of the stone, suture, drainage and death from shock. Mr. P. when I first saw him was 51 years old. He was suffering from an attack of "gastritis," the symptoms of which were pain at the pit of the stomach, general abdominal distress, persistent vomiting and considerable prostration. This attack came on the morning after Thanksgiving, presumably after an unusually full meal. He said he had had such attacks repeatedly for three years. Usually it had been necessary to give morphin to remove the severe, rather constant pain, which was always felt slightly to the right of the middle line of the abdomen and just under the edge of the ribs. The morphin was given hypodermically and the patient carefully examined. A small round tumor the size of a hen's egg could readily be felt almost touching the abdominal wall in the region of the gall-bladder. The liver was not enlarged, the stools were normal colored, there was no jaundice. A diagnosis of a stone in the cystic duct was made and an operation for its removal was recommended. The next day the pain had disappeared, the patient recovered during two or three days on a light diet, and an operation was refused. During the following three years this happened at irregular intervals two or three months apart, one of which always occurred on the morning following Thanksgiving. I attended him through each of these attacks and always recommended cholecystostomy. The patient submitted to a rather restricted diet and during the five following years he had no attacks of pain and often spoke of his wisdom in refusing an operation. At last, upon the morning after the eighth Thanksgiving he sent an imperative message to bring him morphin as he was suffering from another attack of gallstones. This time the pain was much more severe than ever before. The patient showed jaundice six hours after the beginning of the attack, which jaundice deepened gradually during the twelve hours following while we were waiting for the return of his wife in order to operate upon him. It was almost impossible to remove the exacerbations of pain, which come on first at 4 A.M., again at 7 A.M., again at 7 P.M. and lasted from this time continuously until he was operated upon the next morning at 11; but vomiting occurred only two or three times, and nausea was not a prominent symptom. At first a hypodermic of 0.03 gram of morphin was given. Six hours later a teaspoonful of chloroform in olive oil was given by the mouth. After this the pain was controlled by inhalations of chloroform at each paroxysm. His wife returned twenty-nine hours after the beginning of the pain. At that time his pulse was 100, temperature 98 in the rectum; his abdomen considerably distended and his skin in the second stage of jaundice. The abdomen was opened by a small incision in the median line high up, and immediately about a quart of greenish fluid poured out. The finger discovered a completely atrophied gall-bladder, and a stone an inch long and half an inch in diameter in the common duct about its middle portion. This stone had the appearance of two truncated cones set with their bases together. Its surface was dark and nodular. There was evidence of the former contact of a small stone at one end. A long incision was then made on the outer border of the right rectus muscle, the abdominal cavity was carefully washed out with a large quantity of sterile water. The liver and intestines were retracted with the assistants' fingers and a row of twelve fine silk sutures were placed in the wall of the common duct over the perforation, which was found directly over the stone in the middle and beginning lower third of the common duct. The stone was used as a guide in inserting the sutures. When the sutures had been placed a forceps was carefully insinuated into the opening and the end of the stone was grasped, and by the aid of the finger behind it and the forceps it was slowly and carefully withdrawn without much enlargement of the rupture. The duct was explored in both directions without result. The sutures were then drawn together and tied and cut off short. There seemed to be no leaking, and yet fearing this possibility, the omentum was brought up and fastened so as to make a deep well leading down from the long abdominal incision to the rupture in the common duct. This well was filled with strips of iodoform gauze in Mickulicz's handkerchief, and in order to make the drainage more complete a large perforated drainage tube was passed down the center of the gauze for a distance of five inches. Everything was held in place by a few sutures in the omentum, and the abdominal wall was closed, allowing about two inches space for drainage. The operation lasted an hour and a quarter. The patient seemed to suffer only moderate shock, the pulse and temperature at the end of the operation were only a trifle different from what they were at the beginning. During the eleven hours that the patient lived the symptoms of shock increased and the patient slowly but surely, and in spite of every means of stimulation and care, declined. There was no hemorrhage. The dressings were saturated with a greenish fluid; the urine was high colored and the perspiration yellowish. The patient died eleven hours after the operation without reaction. Superficial post-mortem examination through the wound revealed nothing new.

This case illustrates the danger of neglecting to open the gall-bladder and remove the calculus as soon as the diagnosis has been made. It is also a warning against neglecting to operate in case of obstruction of the common duct at as early a moment as possible. Although many cases of traumatic rupture of the gall-bladder have been reported in which recovery took place; after rupture, especially when due to obstruction by a gallstone and presumably accompanied by infection of the biliary apparatus, death from peritonitis is the rule. Mayo of Rochester, Minn., reports a case of injury of the gall-bladder in a boy 12 years old, with recovery after repeated removal of a biliary ascites, and many similar cases are reported. Peritonitis is produced not by bile but by infected bile.

Case 3.—Obstruction of the common duct, absence of the gall-bladder; disappearance of the calculus under manipulation; drainage of the peritoneum; recovery. In August, 1894, Dr. Louis May called me to see a patient, 35 years old,

in whom he believed he had a case of obstruction of the common duct. The patient was a powerful, fat ice-man, of rather intemperate habits, who had suffered from frequent attacks of colic unaccompanied by jaundice. Three days before my observation he had been attacked with colic during his labor distributing ice. He administered to himself liberal doses of whisky, both hot and cold, and had one or two doses of morphin during the night hypodermically. The pain was very severe and the paroxysms were of rather long duration. In the morning he was completely jaundiced. The jaundice increased, the urine became black and the patient went into a comatose condition, with tympanites and occasional attacks of vomiting. This was the condition in which I found him. His jaundice was extreme; the clothing in which he lay was stained with bile. The urine removed from his bladder with a catheter was almost black. The respirations were shallow and the heart beats were faint. The pulse was 110 and the temperature 98. No tumor could be felt. The liver was considerably enlarged, extending downward about an inch and a half beyond the margin of the ribs. Operation for the removal of the obstruction was undertaken. The stools had been removed during the last two days by means of enemas and they were uncolored by bile. The patient was anesthetized with a small amount of chloroform and an incision made along the outer border of the right rectus muscle. The intestines were stained yellow, the liver itself looked almost black, so greatly was it engorged. The space in which the gall-bladder is usually found was occupied by a firm cicatricial mass, and the gall-bladder seemed to be entirely absent. Passing the finger down the common duct, at the first examination it seemed that a row of calculi could be felt, but a few minutes later and after a little further manipulation made to break up some light adhesions over the common duct, they entirely disappeared, nor could they, during the course of the operation, be felt again. At this time a greenish-yellow fluid was sponged out of the bottom of the abdomen and I was afraid, though I could not be certain, that I had ruptured the common duct. Pressure upon the liver caused distention of the common duct, and as soon as the finger was pressed upon it to milk it into the intestine the duct collapsed and the bile disappeared somewhere, presumably into the duodenum. I believed that the obstruction had in some manner been removed, and I feared that the common duct leaked into the peritoneal cavity. The stones could not again be felt; I did not think best to open the common duct and probe for them. Therefore, I built a sort of well leading down on the under surface of the liver between the right lobe and the quadrate lobe and paved the space with strips of iodoform gauze and sewed up the remainder of the wound, covering it all with an antiseptic dressing, held on with adhesive straps. The patient did not vomit after the anesthetic, and on the morning of the following day he was perfectly conscious, had a good appetite and several free bile-stained movements of the bowels. The wife made a superficial examination of the feces, but did not find any stones. This examination I consider valueless, however. The jaundice began to disappear. Upon the third day after the operation he resisted his wife's entreaties and the doctor's orders and dressed himself and went to his favorite saloons to see his friends. The doctor was called and induced a police officer to assist him in taking the patient home and putting him again to bed. The dressings were at first saturated with bile, but after a day or two the discharge was small, the packing was gradually removed and the wound closed without any event. The patient has not had an attack of biliary colic or jaundice since that time and has during the past four years been perfectly well.

This case illustrates the fact that after long continuance of calculi in the cystic duct the gall-bladder sometimes becomes atrophied, and it further illustrates the fact that the stones may be upon the verge of passing into the duodenum and need only slight assistance to dislodge them. It also shows that after forty-eight hours the adhesions about a Mikulicz's drain in the abdominal cavity are strong enough to withstand considerable assault. It seems to me now that in a similar case I should not be satisfied to leave a stone because I could not palpate it.

Case 4.—Repeated attacks of biliary colic for nine years, without jaundice; cholecystostomy and immediate removal of the calculus; recovery.—Mrs. P., 46 years old, the mother of five children, the youngest one 9 years old, had puerperal fever after the birth of this child. The symptoms were very grave. The patient had chills and fever and sweat for six or seven weeks and recovered with broken health, very much emaciated. At the same time she had an abscess of one of her breasts, which required poulticing and afterward incision and drainage. When this child was 1½ years old she had an attack of colic, which lasted for three or four days, during which there was very severe vomiting and great prostration. From this attack she recovered promptly and since that time has had such attacks at frequent intervals, usually as often as two or three times a year. I was called to see her Feb. 13, 1896. She had been suffering for twenty-four hours with excruciating pain in the upper right side of her abdomen, extending into her back and right shoulder. A physician who had been treating her had made a diagnosis of gallstones and had attempted to administer remedies by the mouth, but on account of the frequent and persistent vomiting these remedies had had no effect. The pain was unabated and the vomiting occurred at intervals of ten to twenty minutes, with great retching. I found a large fat woman, with relaxed abdominal walls, moist skin, tender abdomen and a considerably contracted pupil, probably the effect of the morphin. There was no jaundice, and the liver was not recognizably enlarged. The urine was of normal color and contained only normal constituents. The temperature was between 100 and 101 degrees F. There had been no pronounced chill. The pulse was strong but rapid, 110. The patient looked anxious and begged for relief. I made a diagnosis of a single large stone in the cystic duct, and in trying to explain the condition to the husband I made a drawing of what I believed the stone to be, both in size and general appearance. This drawing he afterward compared with the stone which he saw removed. I administered a hypodermic of morphin, 0.03 gram, and urged an operation, basing my diagnosis wholly upon the symptoms. The abdomen was opened by a short incision in the median line and the finger pressed downward and to the right discovered the stone and a slightly distended gall bladder. A second incision was made along the border of the costal cartilage opposite the ninth rib, and the tumor was with some difficulty pressed up into the wound and fastened there with a couple of rows of strong silk sutures. The gall bladder was opened and the stone in the cystic duct was easily pressed forward into the gall bladder and outward through the wound. The stone corresponded almost exactly in size and shape with the sketch I had made of it before the operation. The wound was covered with antiseptic dressing, and during the following three weeks it continued to discharge more or less bile, when it closed suddenly and permanently. Since this time the patient has been wholly free from these attacks and has had no symptoms of sick headache.

This case shows the probable source of gallstones in the puerperal fever which the patient suffered a year and a half before any pain was felt. It also shows how long a patient is frequently neglected, suffering from stone in the cystic duct, a place so easily attacked and so amenable to simple surgical treatment.

Case 5.—Sudden impaction of stone in the cystic duct without previous symptoms of biliary colic or cholangitis, cholecystostomy and discharge of a large number of stones, with a single copious discharge of bile after ten days; closure of the fistula in two months, followed in the course of three weeks by renewed colic; second opening of the gall bladder; drainage for three months; recovery.—Mrs. E., aged 54, the mother of two healthy children, had never had any attacks of biliary colic or symptoms which could be referred to this condition. April 26, 1897, she was suddenly taken with a severe pain in the epigastrium, with vomiting and very slight indication of jaundice. The pain continued for twenty-four hours, with a chill at the end of this time and rise of temperatue to 102. This was followed by repeated slight chills and a continuous high temperature for three days, when I was called to see the patient. She was a large woman of dusky skin and dark eyes. The abdomen at this time was excessively tender and in the region of the gall bladder especially sensitive, but by careful rolling of the tissues under the palm of the hand, a round smooth tumor could be felt, which was believed to be the distended gall bladder. There was nothing significant in the condition of the heart and lungs. The respirations and pulse corresponded with the temperature, which was now 102. The patient was much collapsed and begged to be relieved of the pain and vomiting. I recommended immediate operation, designed to relieve the gall bladder and remove the obstruction in the cystic duct.

An incision was made in the middle line large enough to admit the index finger, and the diagnosis of obstruction of the cystic duct and empyema of the gall bladder was confirmed. The gall bladder was surrounded on nearly all sides by light

adhesions, which did not, however, involve the anterior abdominal wall. An incision was made over the gall bladder and with some difficulty it was drawn up into the incision and fastened there by a row of silk sutures. The gall bladder was then opened and a cloudy whitish yellow fluid was discharged. The finger was passed into the gall bladder, but no stones could be found by a light examination. During the following ten days the patient rapidly improved, and a number of faceted gall stones were discharged. About this time the dressings were suddenly saturated for the first time with bile. A few more stones were then discharged into the dressings and the patient improved, but no more bile showed itself. July 1 the wound had completely closed, the patient was about and feeling well. July 26 the patient was again attacked with the same symptoms which she had suffered in April. I saw her at this time every day. On the third day I determined to reopen the gall bladder in the scar. The patient was as much prostrated as she had been before the first operation, and I determined now to keep the gall bladder open until I was certain that all stones were removed or dislodged. After this operation the gall bladder was drained until November 1, during all of which time there was a discharge of bile whenever the opening from the gall bladder was not plugged. After free drainage for two or three weeks without the removal of any stones, I introduced an olive-shaped urethral sound (about No. 15 American in size) into the gall bladder, and coiled up the silver handle to it so as to make a sort of spring resting against the abdominal wall, thus pulling the blunt side of the olive into the wound to act as a ball valve. This remained in the wound from the last of August until November 1, when it was removed. During all this time there was only a small and not very troublesome discharge of bile. The sound itself on removal was covered with the thinest possible black film, which cracked, rolled up and fell off as soon as it had dried. I can not account for the obstruction which occurred in July. I was not able to find in the gall bladder, or in the cystic duct, or in the common duct any evidence of stone, although I was able without much difficulty to pass a sound into what I believed to be the intestine. During the past six months the patient has been very well and able to attend to her many duties.

Each of these cases has its own story to tell. In only one case did death result, and then because the warnings of biliary colic without jaundice were unheeded, and perhaps, too, because the necessities of the case almost demanded too great a delay after the last warning given by biliary colic with jaundice.

A CASE OF TUBERCULOSIS OF SPLEEN, WITH SURGICAL TREATMENT.

BY A. M. HAYDEN, M.D.
SURGEON TO ST. MARY'S HOSPITAL.
EVANSVILLE, IND.

A scarcity of literature on the subject of surgery of the spleen has induced me to report the following case, one that has been of unusual interest to me.

About Feb. 20, 1896, Mrs. Wm. F., age 24, first felt pain in the left hypochondriac region, which, slight at first, gradually grew more severe until she came under my observation, April 19, 1896. At that time the pain in the region of spleen was at times quite intense, while at others it was entirely absent. There was no rise of temperature, but her pulse was about 100. Her appetite was good, she had no cough or bowel trouble, and attended to her household duties as usual. I prescribed counter irritants externally and quinia and codein internally. Her condition remained about stationary until May 10, when her temperature was 101 degrees and pulse 120. The pain in the spleen was quite severe and on palpation I found quite an enlargement of that organ. She had no chills preceding the rise of temperature, nor other symptoms of malaria. She was well nourished, had rosy cheeks and weighed 108 pounds, which was her average weight.

Notwithstanding she had no symptoms of malaria, I put her on quinin, Fowler's solution and syrup of the iodid of iron, with tincture of iodin externally, and kept her on a similar line of treatment for fifteen or twenty days, during which time her condition continued to grow steadily worse. I was still in doubt about my diagnosis and called council. After a thorough examination, which included the history of both her father's and mother's families, with negative results in regard to both tuberculosis and carcinoma, we were still in doubt about the nature of the trouble that was producing the tumor in the spleen, as it had now reached a size that would justify us in calling it a tumor. My council advised a trial of protonuclein, and it was given her for about two weeks. Meanwhile the tumor of the spleen continued to enlarge, forcing its way up under the short ribs and extending down into the left iliac region and over to the median line, reaching to the umbilicus.

An exploratory operation was done June 23, 1896. The incision was made over the most prominent part of the tumor. After reaching the peritoneal cavity we found the tumor free from adhesion to the abdominal walls.

It was softer than normal spleen structure and of a grayish color. I opened the splenic cyst or covering, which is composed of peritoneum and a fibrous coat intimately connected. Inside of the cyst we found a large mass of abnormal growth and broken down splenic tissue. After removing this soft tissue, which I did with my fingers and a spoon curette, I stitched the splenic cyst to the wall of the abdomen, leaving a cavity in the cyst as large as a baby's head, with no cystic wall separating it from the small portion of the splenic structure that was not removed.

I thoroughly packed the cavity with iodoform gauze and dressed the wound open to secure drainage, thinking that suppuration would take place and it would heal by granulations. A microscopic examination of the specimen removed blasted all such hopes, as it revealed pus corpuscles and tubercular bacilli.

The patient rallied well from the operation. Peritonitis developed on the second day, threatening to destroy the patient's life; after a few days she gradually improved.

Her pulse rate was unusually high compared with the temperature. A chart was kept for twenty-two days after the operation, from which I found an average morning pulse of 114.2, the highest rate being 150, which was noticed June 26, and the lowest 85, July 8. There was an average evening pulse of 119½. The highest reached was 144, June 27; the lowest, July 5, 98. During the twenty-two days there was a mean morning temperature of 99.5 degrees; the highest point being reached on the morning of June 26, 103 degrees; and the lowest July 8, 98 degrees. There was a mean evening temperature of 100.2 degrees; the highest on the evening of June 25, at which time it reached 104 degrees. The lowest evening temperature was 98.2 degrees, and occurred on the evening of July 14, 1896. The high pulse rate continued throughout the entire course of the disease. This high pulse rate has been a peculiarity of most cases of disease of both the spleen and pancreas that have come under my observation.

The patient gradually improved in her general condition as indicated by a good appetite, marked gain in flesh, weighing more three weeks prior to death than she had for several years previous. The opening into the spleen continued to discharge a small

quantity of pus. The tubercular growth in the splenic cyst gradually returned until it attained a size much larger than prior to the operation. She began to cough about six weeks before death; the cough became so persistent and severe that it interfered with sleep. The sputum contained traces of blood and tubercle bacilli. A physical examination revealed slight dulness over nearly the entire lung surface, but no marked flatness. Mucous râles were also present. The abnormal growth gradually crowded up into the opening in the abdominal wall until it rendered the operation of dressing very painful and interfered with drainage. In order to re-establish this and make the dressing of the wound less painful, October 14 I scooped out the entire contents of the splenic cyst through the original opening in the abdominal wall. The tubercular mass was very soft and easily broken up. The only instrument required in the operation was my fingers. After controlling the hemorrhage, which was quite profuse, I dried and packed the cavity with iodoform gauze. The patient rallied well from operation, and at the end of a week had recovered sufficiently to leave the hospital and return to her home. At this time her pulse rate varied from 140 to 150. A few days after returning home her condition grew worse and she gradually declined until November 4, when she died.

Autopsy, held November 5, revealed a great many foci of tubercular deposits in the liver. The pancreas was almost a solid mass of tubercular deposits. The splenic cyst was very much enlarged and partly filled with a cheesy substance which contained tubercle bacilli and pus corpuscles. The lungs were not examined.

Under the conditions was the operation justifiable? In my judgment, the operation was not only justifiable, but demanded. In all cases of tumors or other pathologic changes in the abdominal viscera that would in all probability be amenable to treatment by a surgical operation if correctly diagnosed, an exploratory incision should be made, and any other operation that might prove to be necessary should be done at the time of exploration. I am confident that her life was not only prolonged, but made more comfortable. After she recovered from the immediate effect of the operation, pain ceased; her appetite returned, and she gained considerable flesh; she became more cheerful; took an interest in her home surroundings, and was quite happy for a time, in fact, until the growth had returned and developed sufficiently to cause pain during the act of dressing.

Any other method of treatment would not have reduced the tumor, nor relieved the pain, and, therefore, could not have been as efficient. However, she received about the same internal treatment that she would have, had she not been operated upon, and consequently lost nothing from lack of non-operative measures.

I find that tuberculosis of the spleen is by no means of rare occurrence, but that it affects children more frequently than adults. The nodules may be small and gray, or large and yellow. In acute tuberculosis the spleen rapidly enlarges as the tubercles develop. Tuberculosis of the spleen is generally secondary to that of other organs of the body, while, in the case under consideration, the spleen seemed to be the first organ involved or the primary seat of the disease, the liver, lungs and pancreas becoming involved secondarily. Reynolds says, "tuberculosis is sometimes located in the spleen, but almost, if not always, in connection with tuberculous growths in other organs, and generally in children." Rokitansky says, "in acute tuberculosis of spleen, the organ is smaller and softened very much like the condition it assumes in the typhoid state." Jenner says that it is often the seat of tubercle in children, but only in exceptional cases in the adult.

The lungs and mesenteric glands are very commonly diseased at the same time.

The tubercles are often distributed throughout the spleen substance with much regularity, and they may be solid and hard, but in the course of time they soften in the center, and assume a curdled appearance, or appear like cheesy substance. The "Reference Handbook" says, "acute splenic tumor, without tubercular deposits, occurs during the progress of acute tuberculosis." Splenic tubercles proper are apparently either always secondary to tuberculous growths in other organs, or appear simultaneously with widely disseminated tuberculous growths during the course of acute miliary tuberculosis. In the former case the tubercles are often not very numerous and are visible to the naked eye, varying in size from that of a millet seed to that of a pea, the largest doubtless being composed of several smaller aggregated tubercles. These growths are sometimes called solitary tubercles. They are at first grayish and translucent, assuming later a yellowish or cheesy appearance.

Tubercles of the spleen are alike devoid of interest for the clinician, the diagnostician and the therapeutist. Loomis says, "tubercles in the spleen develop in the spleen pulp." The nodules may be gray and small, or large, yellow and cheesy. Tubercular formations are very common in young children. Yellow tubercular masses, varying in size, are frequently formed in the spleen in connection with similar formations in other parts of the body; occasionally they soften and form abscesses. The small splenic vessels are often clogged with lymph and fibrin. Tubercles of the spleen can not be recognized during life.

Wm. Pepper says, "tubercle frequently attacks the spleen, but only as secondary to general tuberculosis."

Wilks and Moxon think the larger nodules of tubercle may be primary, but there seems to be no evidence in support of this opinion. As a symptom of general tuberculosis, splenic enlargement from congestion simply, and quite without any specific deposit, is observed as a form of acute splenic tumor. It is at the later stages of general tuberculosis that distinct deposits of tubercle are formed in the spleen, and these are consequently almost crude. It is usually impossible to diagnosticate the existence of splenic tubercle during life.

Dr. Orth says, "tubercular changes in the spleen are very common. Primary tuberculosis of the spleen must be very rare, if, indeed it ever occurs, but nowhere is secondary tuberculosis more common than in this organ."

At the time of the first operation the spleen was the only organ in the body that was affected. Would it have been good treatment to have removed it entirely? If so, what would have been the probable results had she survived the operation? If the organ had been removed, and as we believed at the time that was the only point of infection, the patient might have been permanently cured of the tuberculosis. The fact that the patient's health was very much improved after the operation and did not depreciate until other organs

became involved leads me to the above conclusions. Had complete splenectomy been performed, with the result of a complete cure of the tuberculosis, would her life have been prolonged sufficiently to have justified so formidable an operation?

Dr. Wyeth says, "complete splenectomy may be demanded in displacement of the organ followed by interference with the function of other viscera, or for the relief of pain caused by the spleen in an abnormal position." It has been performed in several instances on account of the enlargement of this organ in leucocythemia, but without the success which would encourage a repetition of the operation.

In Ashhurst, "International Encyclopedia of Surgery," Vol. V., p. 1103, I find the following statistics, causes for which the spleen has been excised: From a table published by Mr. Herbert Collier, out of twenty-nine operations performed for diseased conditions since the year 1549, thirteen have been for disease other than leucocythemia, and sixteen for leucocythemia of the gland. Of these sixteen all have been fatal. Of the diseases of the spleen unassociated with leucocythemia in which splenectomy has been performed, in two cases it has been a floating or wandering spleen; one, hypertrophy associated with a floating state of the organ; three, hypertrophy from malaria; three, simple hypertrophy; one, hydatid followed by sanious discharge; one, secondary enlargement after cirrhosis and associated with ascites and anasarca; one, sequestered spleen in peritoneal abscess; and in one hypertrophy, with a unilocular cyst containing three liters of a viscid fluid. Of these thirteen cases, eight have recovered. Of forty-three cases of splenectomy for disease, to which the editor has references, thirty-one are known to have terminated fatally, a proportion almost identical with that shown by Mr. Collier's figures. For injury of the abdomen, implicating the spleen and in several instances attended with protrusion, the results of excision and extirpation have been very encouraging. Nussbaum states that sixteen out of twenty-six operations performed for traumatic causes have been quite successful. (The editor has references to twenty-one cases of splenectomy for traumatic causes, all of which are said to have terminated successfully.)

Statistics are yet not sufficient to enable us to arrive at a satisfactory prognosis in such cases.

AN INTESTINAL OBSTRUCTION, DUE TO AN ABNORMALLY FORMED APPENDIX, ABNORMALLY LOCATED.

BY ANGUS McLEAN, M.D.

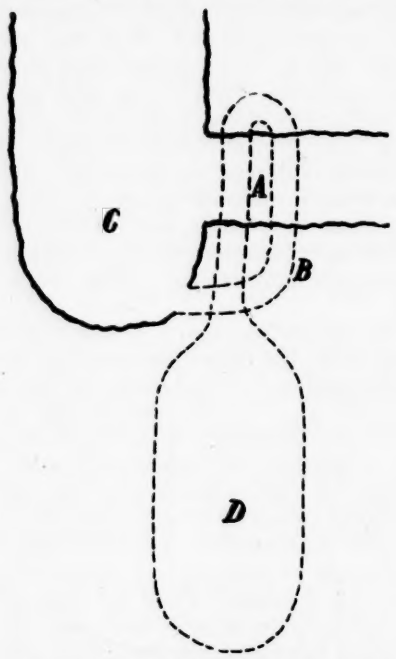
LECTURER AND DEMONSTRATOR OF ANATOMY, DETROIT COLLEGE OF MEDICINE; JUNIOR SURGEON, HARPER HOSPITAL, ETC.

DETROIT, MICH.

The patient who had this rare and unfortunate anatomic phenomenon was a man aged 40 and by occupation a foreman. He was taken with pain in the right lumbar and epigastric regions while at work; the pain was intermittent and gradually became more severe. He was compelled to quit work and go to his home. He became nauseated in a few hours and sent for his physician, Dr. Charles E. Bleakley. The Doctor examined the abdomen but found nothing of a localized character. He administered cathartics, and a slight anodyne for the pain, but the cathartics were ineffectual, and upon seeing him again he gave large doses of cathartics and had this followed by rectal enemata, but this also proved ineffectual. The pain had now become so severe as to require occasional hypodermics of morphia. The Doctor grew suspicious of obstruction and had medical counsel called, but nothing definite was decided upon and the patient was continued upon symptomatic treatment.

I saw the patient on the fifth day and found the abdomen very much distended but no marked localized tenderness. He was not suffering from pain at this time, although he had had no anodyne for twenty-four hours, but appeared to be in a toxic condition. His temperature was 101 degrees F. and pulse 96. The attendant stated that this was the first day on which he had had any fever. I advised that a laparotomy be done at once, and the patient was removed to the Detroit Sanitarium and the operation performed.

After the anesthetic was administered and the tension of the abdominal muscles had relaxed, there appeared to be a slight fulness at the right side just above Poupart's ligament. An incision was made along the outer border of the rectus muscle (right side) opposite the umbilicus. The peritoneal cavity



C, cecum; A, ileum, surrounded by appendix and where obstruction took place; B, point of perforation; D, distended portion.

contained a slight amount of blood-stained fluid; the small intestine was distended and congested and of a dull red color, with some exudation and slight adhesions between its loops. The large intestine was normal in appearance. Upon manipulation a blind pouch of distended intestine appeared at the opening (resembling a Meckel's diverticulum). This was followed to its base and found to be attached to the lower portion of the cecum and to encircle the ileum at its junction with the large intestine, and in its swollen condition so encroached upon the ileum as to obstruct its lumen. The appendix was slightly gangrenous and perforated about one-half inch from the cecum in the portion extending from the cecum to the ileum. A small amount of fecal matter had escaped. The appendix was unwound from around the ileum and removed.

The accompanying diagram will show the position of this abnormal appendage, the heavy lines indicating the walls of the intestine and the dotted lines that of the appendix.

The specimen was seven and a half inches in length; the constricted portion, that is, the portion leaving the cecum and surrounding the ileum, was four and a half inches in length; the free portion three inches long and one and one-half inches in diameter and forcibly distended by gas. It was entirely devoid of mesentery and its canal was pervious throughout. The portion surrounding the ileum passed from behind forward and lay beneath the serous coat; *i. e.*, it was between the serous and muscular coats. The trouble evidently commenced in the appendix, and as the portion surrounding the small intestine became inflamed and swollen, it compressed the muscular coat of that portion of the intestine which it surrounded, gradually causing the obstruction.

Greves reports a case of intestinal obstruction due to the appendix, in the London *Lancet* of Dec. 6, 1884. In his case the free end of the appendix had become attached to the peritoneal wall, the body of the appendix forming an arch, under which a loop of the small intestine had passed and became strangulated.

Nicolaysen reported a case in the *British Medical Journal* of July 23, 1892. In this case the appendix had been previously inflamed and the mesentery of the appendix had become adherent to a portion of the small intestine; this afterward produced a volvulus.

I do not know of any similar case to the one I have described being reported by any writer, and this adds one more reason why the appendix should always be considered when the peristaltic action of the intestinal canal is interfered with.

NOTE.—The specimen was exhibited before the Detroit Medical and Library Association on Sept. 13, 1897.

STUDIES OF SOME FACIAL BONES.

Presented to the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY MATTHEW H. CRYER, M.D.

PHILADELPHIA, PA.

The experience gained in a hospital devoted to the treatment of diseases of the jaws, face and associated parts, demonstrated to me several years ago that the text-book descriptions of the anatomy of these parts did not correspond closely with numerous observed clinical facts. To clear up the contradictory elements of this subject, I began, some four years ago, to make serial sections of such skulls as I could gain possession of, in all, numbering some hundreds.

These studies, some of which have been published, demonstrated that many of the printed, or text-book, description of the parts included, contained matter entirely at variance with observed facts.

Finding these printed errors so numerous in the anatomy relating to the parts embraced in the field of oral surgery, it was natural to carry the observations to more distant parts, and I found in them, as will be shown, that errors of description are far from uncommon in the works on anatomy relating to the nasal chamber.

When there is lack of bi-lateral symmetry of the part of the bony anatomy of the head, it is commonly associated with other marks of lack of bi-lateral symmetry, and vice versa; that is, if observation shows the dental arches, the palatal processes, and inferior maxillary bone to be bi-laterally symmetrical, bi-lateral symmetry usually exists in all of the bones, and so on.

Figure 1 shows an under view of a skull almost anatomically perfect, except that the external plates of the pterygoid process are not quite alike upon both sides, and there is a slight difference in the zygo-

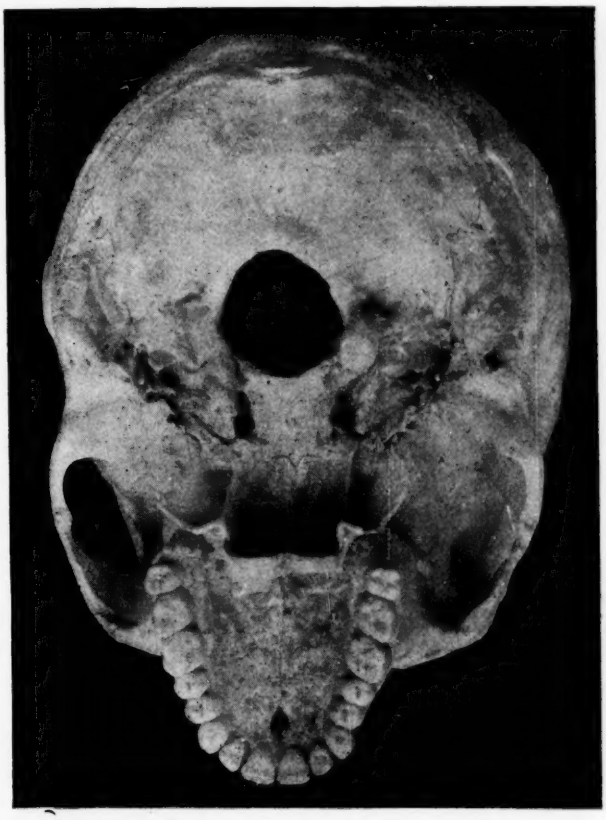


Figure 1.

matic arches of the two sides. The skull is tilted slightly, so that the sides do not appear as symmetrical as they really are.

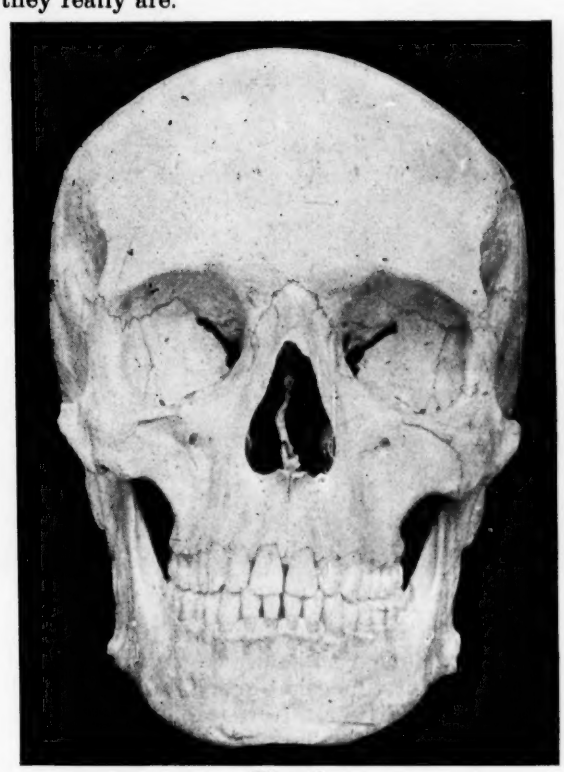


Figure 2.

Figure 2. Same skull gives a front view, the only lack of symmetry being a slight deviation of the septum of the nose. The bulla ethmoidalis of the left side is somewhat larger than that of the right, and the nasal septum is deflected from that side. It is often said that the septum is never straight. This, however, is an error, for I have many specimens in which it is perfectly vertical.

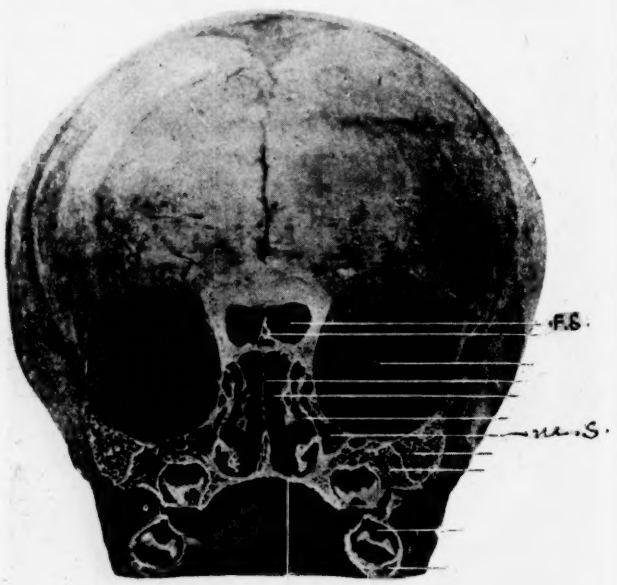


Figure 4.

Figure 3. The first of this series is a vertical section through the facial bones of a seven months fetus. The specimen is almost perfectly symmetrical, bi-laterally. It shows the beginning of the development of the maxillary sinus, M. S. The line of junction between the superior maxillary and malar bones is

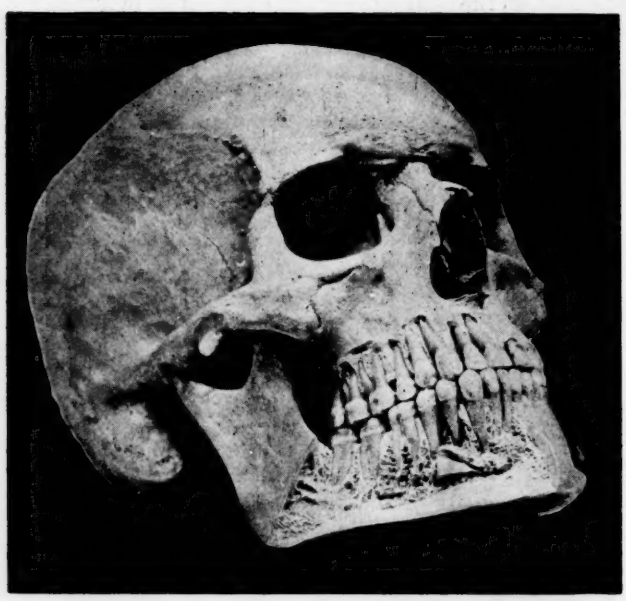


Figure 3.

well-marked, as is also the infra-orbital canal, lying beside the developing antrum. Attention is called to the appearance of this canal in section. It looks like a cross-section of a tube. Note the point of the nasal wall at which the invagination, which is to form the future sinus, begins; it is at a higher level than the floor of the orbit. The direction of the developing sinus is downward and outward.

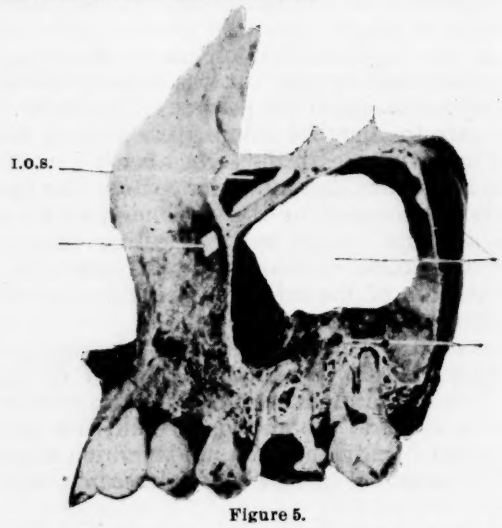


Figure 5.

Figure 4 represents the antero-lateral view of the skull, giving a general idea of the several external bones of one side of the face and head. The occlusion of the upper and lower teeth is almost normal. It shows the relations of the bones, of which we are to speak, to the other external bones. The outer surface of the lateral and anterior wall of the antrum is shown, the teeth having been denuded of the exter-

Figure 6.

nal plate of the alveolar process. The maxillary sinus has been opened immediately over the roots of the first, second and third molars, showing, in this case, how thin the bone is between the roots of the teeth and the floor of the sinus. It is also very thin over the points of the roots of the cuspid and first and second bicuspids. I wish to draw attention to the position of the infra-orbital foramen, which is usually

Figure 7.

described as the termination of the infra-orbital canal, which passes through the solid portion of the infra-

orbital ridge to the groove in the floor of the orbit. Several of the figures will show that this canal often passes diagonally through the sinus in the shape of

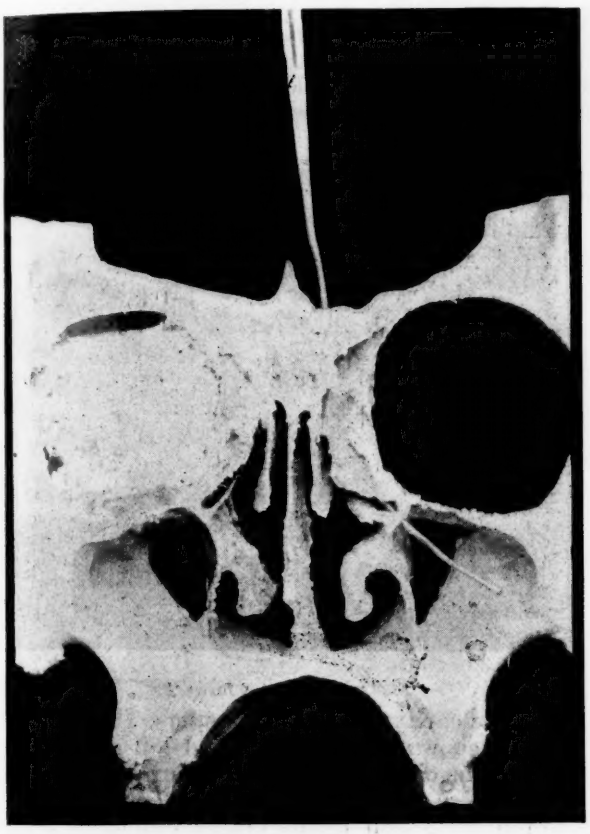


Figure 8.

a tube—a fact I have not noticed described in any work on anatomy. In the lower jaw is shown the recurrent branch of the inferior dental canal opening at the mental foramen, together with other features of special interest to the oral surgeon.

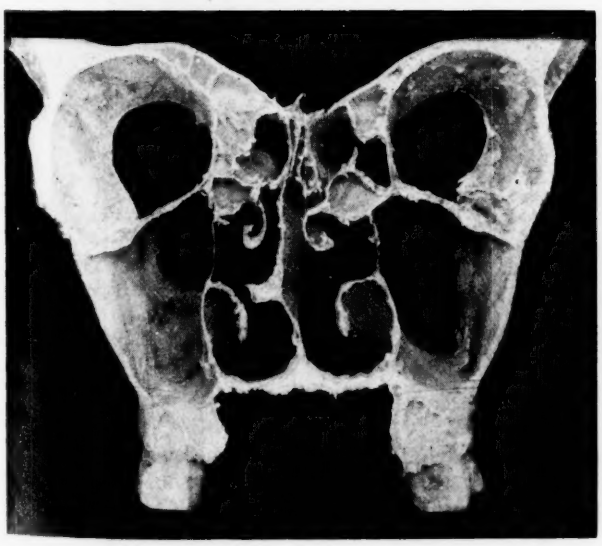


Figure 9.

Figure 5 shows a vertical section made through the upper portion of the right superior maxillary bone. In the upper front portion of the antrum is shown the passageway for the infra-orbital vessels and nerves, a distinct tube and not a passage channeled through the bone. The sinus in this case is seen extending into the infra-orbital ridge, forming what might be fitly termed an infra-orbital sinus. (I.O.S.)

The relations of the roots of the molars to the floor

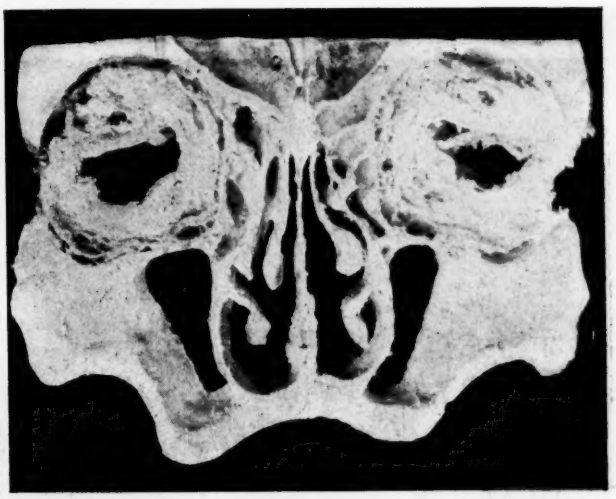


Figure 10.

of the antrum is an interesting feature of this section.

In consequence of the death and decomposition of the pulp of a molar tooth, there has been, first, irritation and a constructive periostitis upon the floor of the antrum, which has caused a thickening of the bone over the apex of the root. At a later period,

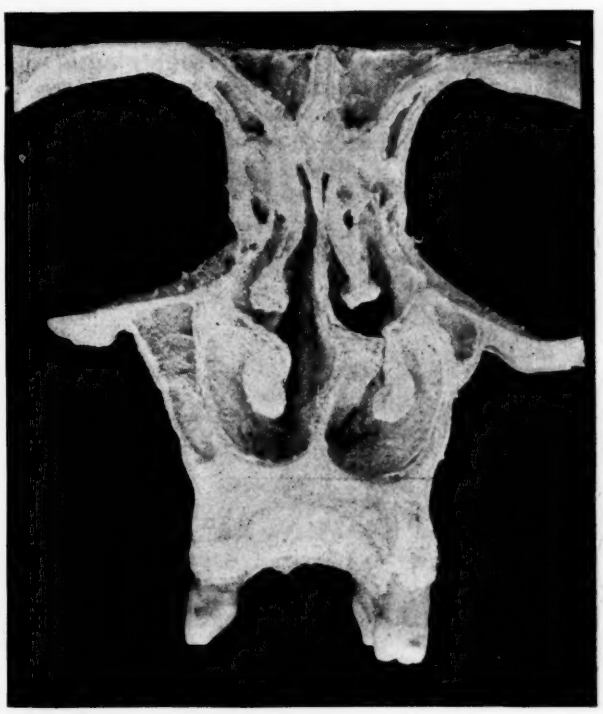


Figure 11.

suppurative inflammation has occurred, an abscess has formed and perforated the floor of the antrum.

Figure 6 shows the floor of the antrum extending between the roots of the molar teeth, a condition much more common among the white races than

among the negroes, according to my observation. Abscess upon the roots of such teeth may cause perforation of the floor of the antrum, and the extraction of a tooth would almost certainly be accompanied by fracture of the floor of the sinus. Note, also, that regarding the antrum as a cuboidal cavity, its exit is at its upper and inner angle. Note, also, the angle of the uncinate process. This is the usual

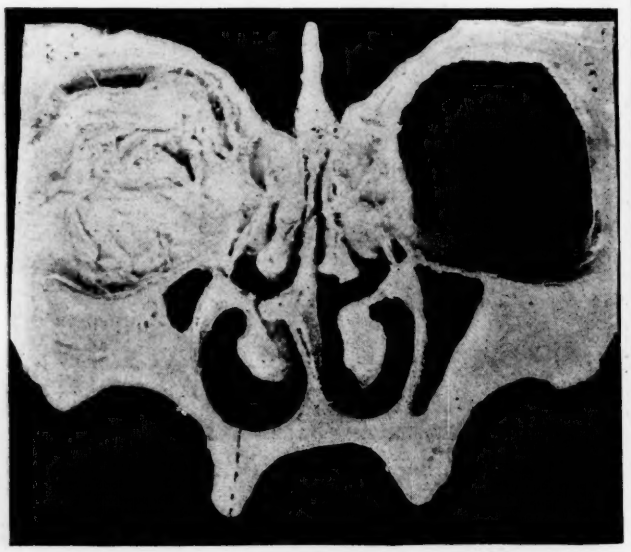


Figure 12.—Looking backward.

condition in all the skulls I have cut. You will see, therefore, that it is a mechanical impossibility to pass a probe from the anterior naris through the foramen of antral exit in normal bone.

Figure 7 is a tooth which has been drilled through while in the mouth, the operator supposing his drill was passing up the palatal root of the tooth, instead of which it passed through the base of the crown, the

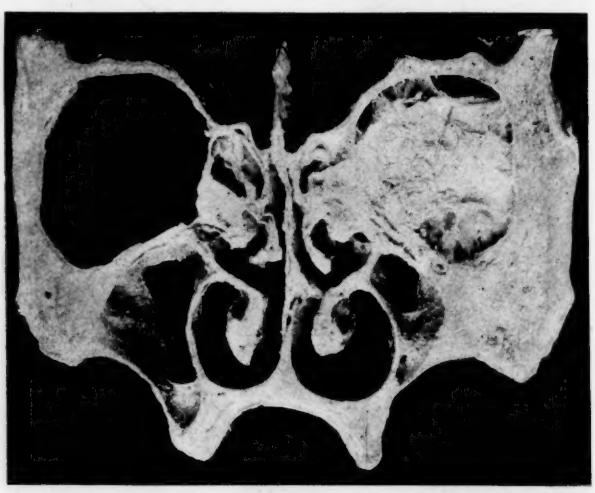


Figure 13.—Looking forward.

pulp chamber, the alveolar process, and into the maxillary sinus. It will be observed that in extracting it a portion of the floor of the antrum has been brought away with the tooth. The patient was suffering, at the time of extracting, from empyema of the antrum.

Figure 8 is a section of a negro skull. Note the greater thickness of the floor of the antrum. The point of special interest in this specimen is the probe, passed through the foramen of exit from the frontal sinus, the unobstructed path of which is directly into the antrum. I pointed out two years ago how common it was to find this condition, one in which effusions, or secretions, from the frontal sinus would find their way into the antrum.

Figure 9 is introduced to show the vertical septa, which frequently cross the antrum from side to side, springing from its floor, and dividing the lower por-

Figure 14.—Looking forward.

tion of the cavity into semi-chambers. Septa of two sizes are shown in the right and left sides. Note, also, how the development of the antrum has reduced the thickness of its walls to thin boundary layers. Note the projection of the bulla ethmoidalis upon one side; it is common to find a deviation of the nasal

Figure 15 *a*.

septum from that side in such cases, as may be seen in some of the following figures; adenoid growths are also common.

Figure 10 exhibits a condition occasionally met with, the floor of the antrum dipping inward, and partially under the floor of the nose; it will be noted, from the axis of the alveolar process, that in this case the sinus could be drained directly from the palatal aspect of the mouth.

Figure 11 exhibits an entire lack of symmetry between the nasal fossæ and the sinus of the right and left sides, the inferior meatus of one side being closed anteriorly by the deflected nasal septum.

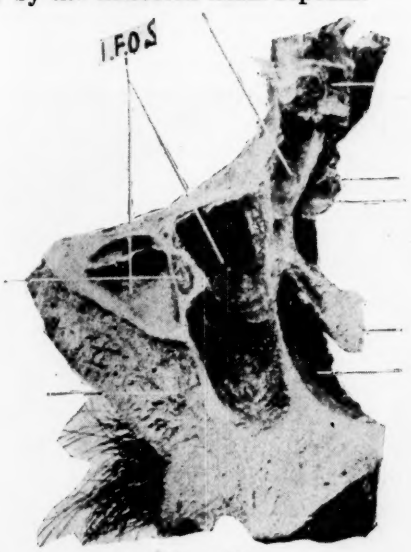


Figure 15 *b*.

Figures 12 and 13 are from the same head. It will be noted that a line, or instrument, passed through the axis of the alveolar process of the right side would perforate the floor of the nostril, instead of the floor of the antrum.

Figure 14 is from the same subject, posterior to the

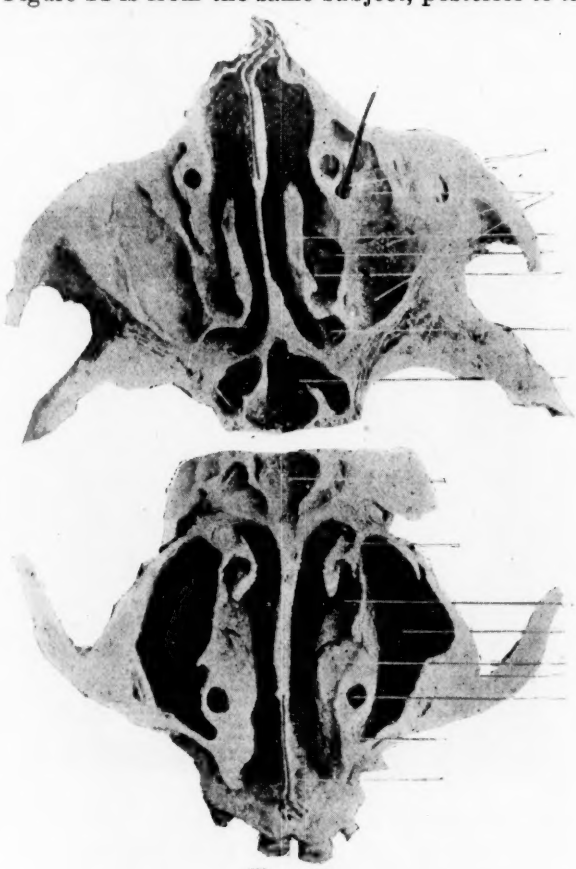


Figure 16.

other sections; the lack of symmetry of the antra is well marked, the more prominent side of alveolar process being associated with the larger antrum.

Figure 15 shows well the exit from the antrum at its upper and inner portion, together with the direction of the hiatus semilunaris. Note, also, the section of the infra-orbital tube. The second figure of the cut shows the division of the sinus, which I have called the infra-orbital. At the right upper corner is the normal opening of the maxillary sinus, leading into the hiatus semilunaris, which is bounded below

Figure 17.

and to the inner side by the uncinate process, to outer side by the wall of the sinus, and above by the bulla ethmoidalis. This last named rounded projection contains the middle ethmoidal cells; they vary in size in different skulls, and very often in the same skull. I believe this structure to be an important factor in

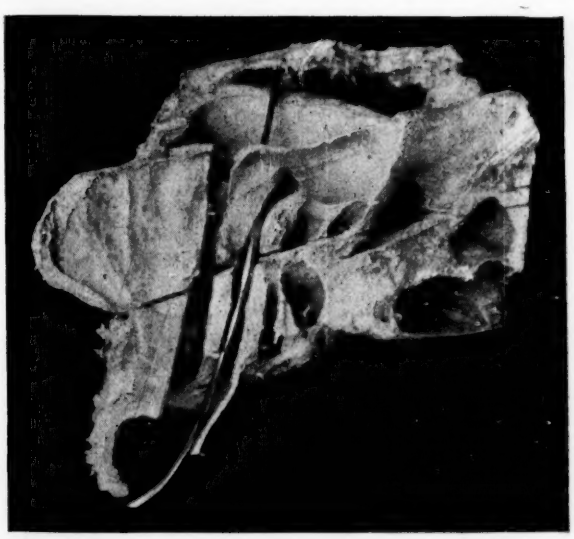


Figure 18.

causing various diseases of this region, including those of the maxillary and frontal sinuses.

Figure 16 shows upper and lower views of a transverse section passing near the roof of the antra, where it is noted that the place of exit from the antra is in the roof.

Figure 17 shows by the probes passed through the

passages, the relative directions of the exits from the maxillary and the frontal sinuses.

Figure 18. Where there are two infundibula leading from the frontal sinus to the antrum, the probe passing upward into the frontal sinus passes through the infundibulum.

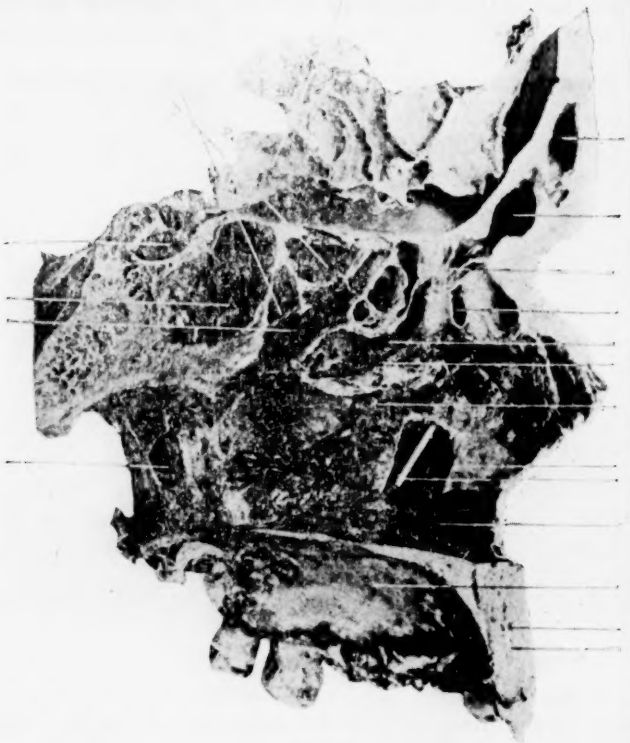


Figure 19.

Figure 19 shows the outer nasal walls, and the normal relation of the bulla ethmoidalis with the uncinate process, together with the nasal entrance to the maxillary sinus.

Figure 20 *a*.

Figure 20 shows abnormal perforation of the inner wall of the antrum. In consequence of the enlargement or distension of the chambers of the bulla ethmoidalis, there has been occlusion of the hiatus semilunaris. Presumably the contents of the antrum have made for themselves an escape, by forming a false foramen. In Figure 20 *a*, the septum is in place. It will be seen that there is an opening in it, exposing to view the bulla and its ethmoidal cells. This absorption of the portion of the septum has been caused by pressure of the deflected septum, and the

Figure 20 *b*.

enlargement of the bulla ethmoidalis. Figure 20 *b* shows where the septum has been removed, exposing to view the two abnormal openings, and the loss of the greater portion of the middle turbinated bone by absorption through the pressure of the bulla down near the uncinate process.

Figure 21 is taken from the left side of the same

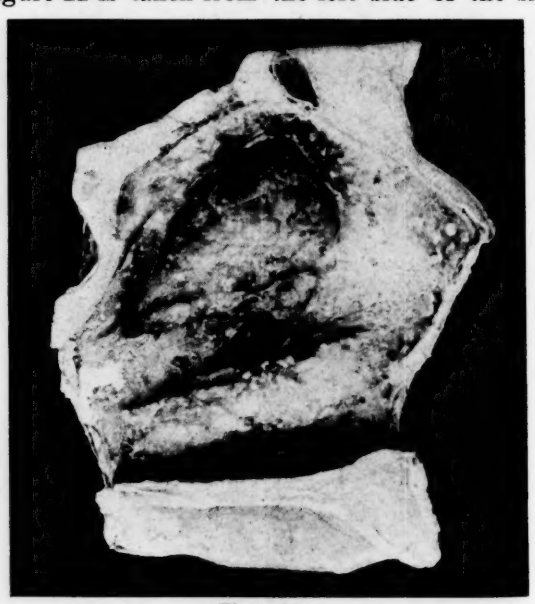


Figure 21 *a*.

skull. Figure 21 *b* has the middle turbinate bone in position, showing an abnormal opening. Figure 21 *a* has the middle turbinate bone cut loose and turned upward, exposing the bulla extending downward and closing the hiatus semilunaris, the passageway for the fluids from the frontal and maxillary sinuses, also from the anterior and middle ethmoidal

cells. This closure has been the cause of the abnormal opening from the maxillary sinus.

Figure 21 *b*.

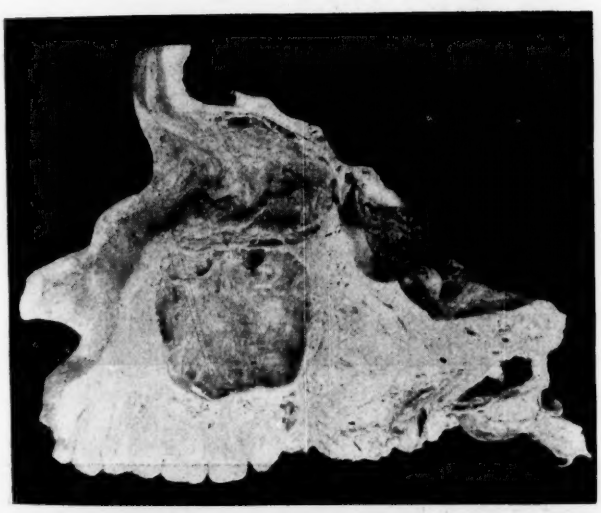


Figure 22.—Right.

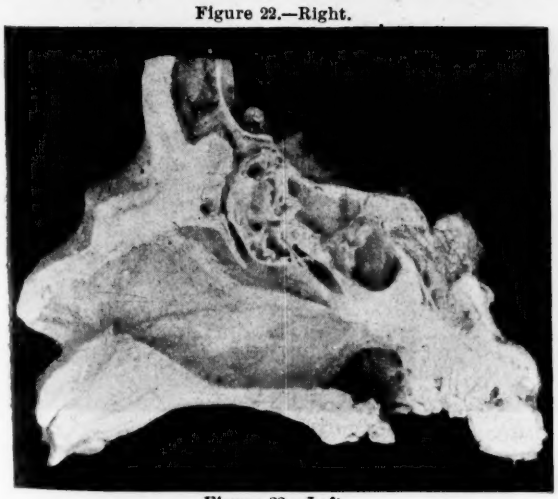


Figure 22.—Left.

Figure 22. The right picture shows the outer wall of antrum removed, the section passing almost through the axis of the molar teeth. The relation of the ends of the roots of these teeth with the floor of the antrum is shown. The special feature of this cut is the double opening leading from the antrum.

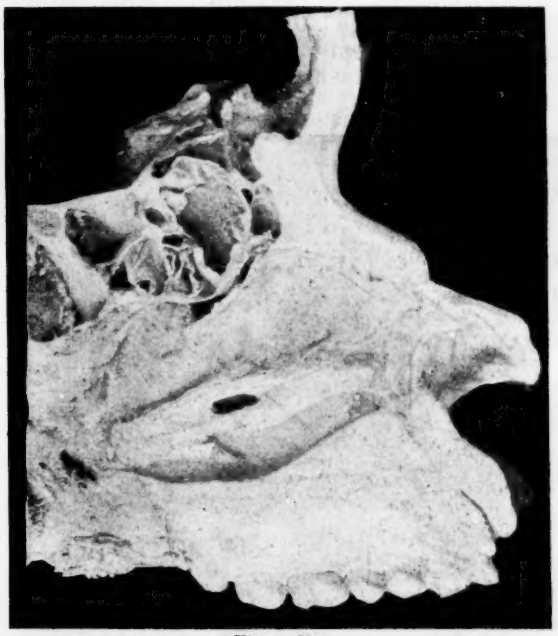


Figure 23 *a*.

Figure 23 *b*.

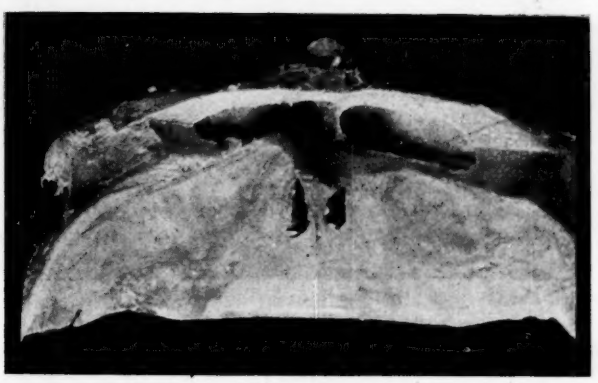


Figure 24.

The left picture is made from a section cut immediately within the nasal cavity of the same subject. It shows a section of the bulla ethmoidalis, which is very large, extending downward and forward, partially closing the infundibulum and the hiatus semilunaris.

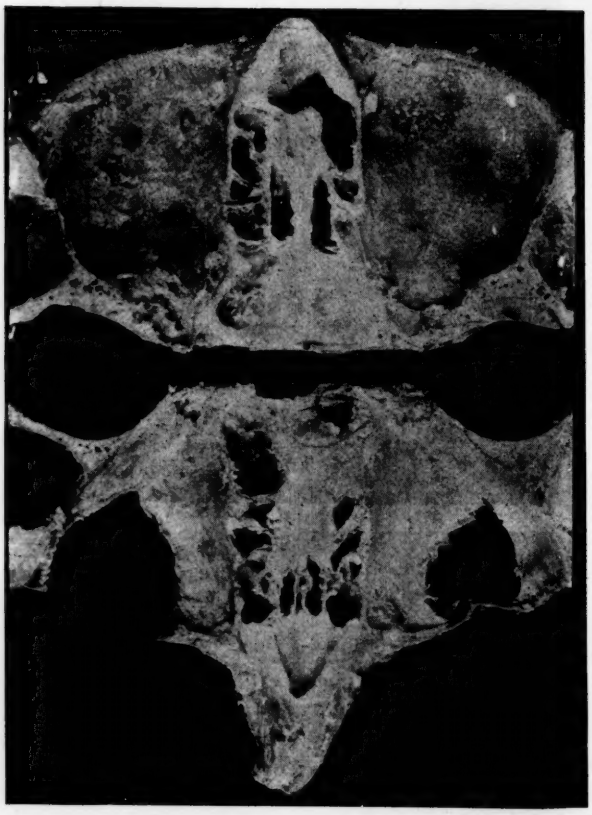


Figure 25.

Figure 23 is from the same specimen; figure 23 *a* being the same as that at the right in the last, figure 23 *b* being the other half of the section. They show a bulla ethmoidalis cut through. There is also

Figure 26.

a condition sometimes met with, particularly when the hard palate is unusually flat, the floor of the nose, instead of being horizontal, is depressed about the middle, giving a concavity to the floor of the nose.

Figure 24 shows a transverse section through the frontal sinuses; from one of which there has been no foramen of exit.

Figure 25. Same subject; the section made one

Figure 27.

Figure 28 *a*.

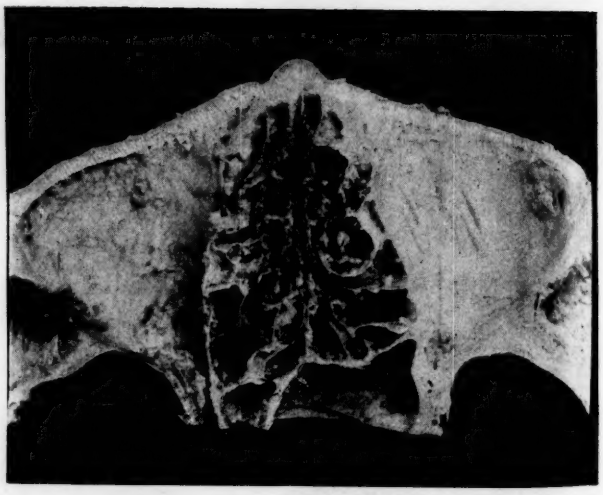


Figure 28 *b*.

inch below the former, shows the downward excavation which has occurred in the occluded sinus. In the lower picture the surface of the specimen is shown, the excavation extending into the nasal bone. A

marked irregularity of the ethmoidal cells of the two sides will also be observed.

Figure 26 is also a specimen of unilateral occlusion. This section exhibits the floor of the brain case. It appears as though the secretion of the occluded sinus had formed a retention cyst, the pressure of which has caused perforation of the brain case, the crista galli being bent down almost flat by the growth of the cyst. Unfortunately, I have no antemortem, or clear postmortem notes of the cases. I should expect, however, that the patient presented cerebral symptoms.

Figure 27. Same specimen; shows the effect of the encroachment of the cyst upon the inner orbital wall, which is badly broken down.

Figure 28 shows a horizontal section through the ethmoidal cell, nasal fossæ, etc., at a point indicated in the last figure (No. 27).

These slides are presented with a double object; first, to show what limited reliance is to be placed upon ordinary text-book anatomy of these parts; second, to demonstrate that what are called abnormalities of structure in these parts are far from uncommon.

DO VIVISECTORS INFLICT UNNECESSARY SUFFERING IN THEIR INVESTIGATIONS?

BY E. STUVER, M.S., M.D., PH.D.

Member American Medical Association; Colorado State Medical Society; International Medical Congress Berlin, etc.

RAWLINS, WYOMING.

About July 18, 1897, there was published in the *Rocky Mountain News*, an article by E. K. Whitehead, secretary of the Colorado Humane Society, followed on August 30 by another. In these articles the scientific experimenters of the world are directly charged with brutal, inhuman, wanton and cruel conduct toward animals, in carring out their experiments and investigations. Physicians are charged with being participators or accomplices in these so-called atrocities, and it is claimed that no real advance in medical knowledge, which could not have been made without it, has followed as a result of vivisection.

The charge that physicians, without sufficient cause, sanction wanton or cruel treatment, or animal mutilations and sufferings which are unnecessary, is a gratuitous insult to a profession animated by the most self-sacrificing and humane instincts of any class of people in the world, a profession which has done more to alleviate human suffering, stay the devastations of plague, diseases and death, to discover and demonstrate the laws of health and causes of diseases, and raise mankind to a higher and better plane, in short to advance civilization, than all other influences combined.

When these facts are appreciated I believe all fair minded people will concede that the medical profession is animated by noble and disinterested motives; that its vivisections and all other investigations and experiments are made in the interests of science, truth and humanity, and not, as has been charged, for the mere sake of performing experiments.

The object of all these scientific investigations is to find out the causes of things, and it was only when inductive science came and put intelligently planned experiments in the place of haphazard experience that a single advance was made. (A. M. S. B. April 10, 1897, p. 318.) On the principles and truths thus discovered by experimental investigations, the splendid results of our modern scientific knowledge and inventions, our progress in medicine, surgery and sanitary science almost entirely depends.

We who live under the benign influences of modern sanitary surroundings, and in the clear light of the laws of health already demonstrated by vivisection experiments, can not realize the benefits we enjoy until we draw aside the dark pall of time that covers the results of thousands of years of empirical experience. Do this and we behold plague and pestilence sweeping over the land, leaving desolation and death in their track. Here we see cities converted into charnel houses, the streets covered with dead bodies, and not enough well to care for the sick and dying; there we behold uncoffined corpses rolled into great trenches, or left as food for ravening animals, or to pollute the atmosphere. We, who enjoy the immunity afforded by vaccination, can scarcely believe that such ravages were caused by smallpox in London as are so graphically described by the historian Macaulay, who informs us that it was a rare thing at one time to find a person in that great city not disfigured or marked by the dread disease. Experimental investigation has stamped out smallpox, except in communities ruled by antivaccination cranks, and diphtheria appears to be in a fair way to share a similar fate. Still, we are challenged by the hypercritical, hypersensitive and I might say, hysterical advocates of a measure which is designed to be the entering wedge of a system of espionage, surveillance and obstruction to experiments made on living animals; a system that would place the lives of a few dogs, cats, guinea pigs, or other lower animals above science, truth and the lives of thousands of human beings, for however much some of the advocates of the pending measure may try to conceal their real intentions, yet their avowed purpose, as boldly announced by others, is the entire suppression of all vivisection. We are challenged by these misguided people to give specific instances of the benefits arising from vivisection experiments. While anything I may say, probably will not influence radical antivivisectionists, because, as some one has said, "some human beings would deny the multiplication table and the axioms of geometry, if they came in the way of their sentiments," still I hope that fathers and mothers who desire to see their children grow up into strong, healthy and happy men and women, will impartially consider the facts of history and lend their assistance in securing the desired results.

By the vivisections of Malpighi, Waller and Cohnheim we learned how blood nourishes the tissues; by the animal experiments of Aselli and Pecquet, how the chyle is carried into the blood. The processes of intestinal digestion were revealed by the vivisections of Hunter, Magendie and others. Sir Charles Bell and Magendie in the same way discovered the difference between the motor and sensory functions of the spinal nerves, and the experiments of Ferrier and a host of others have so illumined the physiology of the brain and localized its functions that many things which were dark and mysterious a few years ago are now as clear as the noon-day sun. The results of the experiments of Pasteur caused Lister to investigate the influence of antisepsis in the treatment of wounds. This has led to our modern antiseptic treatment which has saved thousands of lives and untold suffering, besides bringing surgery to a degree of per-

fection undreamed of a few years ago. But it may be asked, is this all that vivisection has done? For thousands of years under the regime of empiricism men continued to breathe and re-breathe foul and poisoned air. By living in close badly ventilated buildings they intensified mild diseases into pestilences, and then explained the result as a scourge of the Almighty for a lack of fealty to their faiths. Their homes, their churches and their public halls defied every law of sanitation, so that the death rate of London was 80 to the 1000. In 1674 John Mayow, a young Oxford physician, became sceptical of the prevailing doctrines, and defying society's prohibition of experimentation on animals proceeded to find out how animals breathed. By the painful slow suffocating to death of a few animals in air-tight jars, Mayow demonstrated that the agony and death of a suffocated animal were due to the consumption of a constituent of the air.

As soon as these facts were known the old superstitious notions of disease being caused by ghosts and demons vanished in air, and the results of the sacrifice of a few mice, the wanton, brutal torture it might be called by some, came with healing wings to banish slow poisoning, torture and death from millions of homes, to carry sunshine into gloomy hearts and to give hope and inspiration to heavy laden spirits, to brighten and gladden the present and span the sky of the future with a refulgent bow of promise. Later on, Black, by the aid of more experiments on animals, discovered the effects of carbonic acid gas. Priestley in the same way demonstrated the life-giving quality of his oxygen, and Rutherford and Lavoisier followed the same course in proving that nitrogen would not support life. Thus we see that the foundation stones of modern chemistry were laid by this kind of vivisectings.

One of the most signal and conclusive examples of the great value of animal experimentation is the splendid success of the antitoxin treatment of diphtheria, especially in that deadly form affecting the larynx. Where formerly fathers and mothers stood by the death beds of their dearly beloved children, who were slowly strangling, and in agonizing sorrow saw them snatched away by the fell destroyer; where the sympathizing physician, impotent to cope with his relentless enemy, stood by with downcast face, we now behold smiles of joy light up the faces of the parents as they see the roses stealing back to the cheeks of their stricken ones, and the proud happy look of the physician who boldly faces and defeats his old enemy! I ask these fathers and mothers if one such victory as this is not worth more than all the horses that have been sacrificed in attaining the results. And when we consider the thousands of innocents saved to advance and adorn civilization through cycles of the future, we can appreciate the almost infinitely beneficial results that flow from animal experimentation.

We thus see that nearly all our knowledge of physiology, much of that in chemistry, and many of the greatest advances in curing or stamping out diseases have resulted directly from vjvisections. We have seen the death rate of London reduced from 80 to 18 per 1000, and in the face of all this the people of this great country are asked to restrict vivisection, to place all operators under inspectors who are to work without pay! It ought to be plain that only two kinds of persons would fill the position under such conditions, the enthusiastic vivisector, eager to discover the truths of nature, or the bigoted fanatic who would use all the powers of his position to obstruct or prevent the work.

Then, too, the provision to limit this kind of work to those 25 years of age or over would have a most disastrous influence on scientific progress, because in order to train an experimenter in methods of accuracy and precision, and to cultivate habits of careful and systematic observation the work must be begun long before that time of life. Men endowed with a genius for scientific investigation are very rare indeed, and those so gifted should be given the fullest opportunities to develop their faculties during youth when the perceptive powers are keenest, and impressions made on the mind are retained with greater clearness and tenacity than at any other time. Think of the loss science and humanity would have sustained if Carpenter, Agassiz, David Starr, Jordan and hosts of other investigators had not been permitted to begin their work before 25 years of age! The whole gist of the matter, however, centers around the question: Are the vivisectors of this country at the present time guilty of inflicting wanton, cruel, brutal and unnecessary suffering upon animals? I say the present time advisedly, because (*American Medico-Surgical Bulletin*, April 10, 1897, p. 321), the evidence presented before the Congressional Committees, and the tales told in pamphlets and papers to influence public opinion are hoary with age. The same pictures and stories which did service in 1874, with scarcely any change have been regalvanized, republished and trotted out in their age and decrepitude to mold public opinion in 1897. If the vivisectors of the District of Columbia are the incarnate fiends they have been represented to be, why is it that after a most careful search of over a year their enemies have not been able to justify their attitude by a single case? Even if mistakes were committed twenty-five or fifty years ago (and it can be shown that many of the stories about that day were pure misrepresentations or gross exaggerations) does it follow that scientific progress ought to be hindered, or scientific men of the present time made to bear the odium of by-gone days? If such a rule were followed the noblest and most sacred causes in the world would be obliterated by a crushing load of obloquy.

Draper ("Conflict Between Science and Religion," page 207) tells us "that in order to extirpate religious dissent by terrorism and surround heresy with the most horrible associations," the Inquisition, "between 1481 and 1805 had punished 340,000 persons and of these nearly 32,000 had been burnt." Nor is it necessary that we leave our own "land of the free and home of the brave," for similar examples.

Our own New England witchcraft tortures and executions ought to make us very modest on that question. Of course the victims offered up in the name of religion were only human beings. If they had been dogs, cats, guinea pigs, etc., sacrificed to stay the ravages of pestilence, disease and death, and carry health, happiness and sunshine into every home in the civilized world it would be a very different matter, and it would be eminently proper to call the investigators "unnamable devils."

The crusade of the antivivisectionists from beginning to end has been a series of equivocations, misrepresentations, and half truths. They never have dared to tell the whole truth, and discuss the question on its merits, and some of the strongest evidence that they

have presented is based on statements made by writers who were misinformed when these statements were written, but who later on had the manhood to acknowledge that they had been deceived by antivivisection literature and retract their mistakes. Have these zealous humanitarians had the manhood to publish the retractions along with the original? Have these earnest advocates of justice and right had enough true nobility of character to admit that they had suppressed the truth and perpetrated an injustice against their fellow men? We leave the history of the movement and the justice of the people of this nation to answer these questions.

Even if the human race had never received a particle of benefit from vivisections, according to eminent authorities the animals themselves by the stamping out and relieving of their own diseases have been spared more suffering during the last twenty years than has been caused by all the experiments ever performed in the world, to say nothing of their immunity from disease in the future.

Then too, many of the pathetic appeals and blood curdling recitals of horrible sufferings are based on gross ignorance of physiologic knowledge. If these writers knew that the motor region of the brain was insensitive and that operations on those parts of the brain substance do not cause any pain whatever and that nearly all animals operated on are first rendered insensible to pain by anesthetics they would be spared many useless tears. More real knowledge and less sentiment would be an inestimable gain both to themselves and to humanity. But to show that we bear them no ill-will, indeed that we admire their zeal and enthusiasm, misdirected though it be, we would suggest that they turn their wonderful energies and great abilities into more appropriate channels. If they will put a stop to the wanton, useless and utterly repugnant slaughter of the thousands of feathered songsters, the victims of fashion that are every year killed to ornament the bonnets of women throughout the civilized world, they will prevent more suffering than is inflicted by all the scientific experimenters in existence. If they will prevent the wounding and mutilating of the thousands of animals that yearly drag out a miserable existence and probably starve to death; the chasing of defenseless creatures with horses and hounds until they actually drop dead, and other similar cruel things done in the name of sport; if they will rescue some of the thousands of women and children who are constantly dying by slow starvation in our large cities, they will find their time fully occupied and do a great deal of good. While they are doing this work they can rest assured that the welfare of humanity as well as the interests of animals will be protected and advanced by physicians and scientists as they always have been in the past.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular Meeting, Feb. 11, 1898.

Dr. JOSEPH B. BACON in the chair.

C. S. N. HALLBERG, Ph. G., read a paper on

THE PHARMACOPEIA OF 1900 IN ITS RELATIONS TO THE VARIOUS DEPARTMENTS OF MEDICINE.

In introducing this subject it may be well to give a comprehensive definition of the pharmacopeia, what it is, its purpose and its functions. Medical dictionaries and other standard works give definitions which for practical purposes are wholly unsatisfactory. As a rule these works define a pharmacopeia "as an authorized work containing a collection of formulæ," etc. The publication of a pharmacopeia was the necessary and logical outgrowth of the confusion in the identity and strength of medicine existing up to nearly the beginning of the present century. Nearly every medical man of any considerable note and ambition became the author of a dispensatory, each one differing, often as to essential particulars anent potent and important remedies. These works were adopted for certain medical centers such as, Nuremberg, Venice, Augsburg, Cologne, Edinburgh, etc., and were later followed by local pharmacopeias such as those, for instance, for London, Dublin, Paris, Berlin, Hanover, etc. The first half of the present century saw these local pharmacopeias superseded by works of national authority until now, at the close of the nineteenth century, no country can maintain position as a nation without a pharmacopeia; one of the latest, but by no means the least creditable, being that of Japan. The most important republics of Central and South America have their own pharmacopeias. In some, foreign pharmacopeias are employed, chiefly the French Codex and German Pharmacopeia. The republic of Costa Rica adopted officially, in 1897, through La Faculdad de Medicina y Cirurgia at San Jose, the United States Pharmacopeia as the standard authority. In Canada and the British provinces the United States Pharmacopeia is used more than the British pharmacopeia. The project of an imperial pharmacopeia for the British Empire is meeting with but little favor and its realization is doubtful. Attempts have been made toward the formulation of an international pharmacopeia and also a Pan-American one. The former will be considered by the International Pharmaceutic Congress which is to meet in Paris in 1900.[1] The first United States pharmacopeia was issued in 1820 and each decade subsequently has seen a revision. The one now official, designated as the seventh decennial revision, was adopted Jan. 1, 1894. The earlier editions and revisions were the work chiefly of such medical scientists as Samuel L. Mitchell of New York, Erastus Torrey of Vermont, William Tully of Connecticut, Nathan Smith of Connecticut, Valentine Mott of New York, Samuel P. Griffith, Joseph Parrish, George B. Wood, and Franklin Bache of Philadelphia. The Committee was increased to twenty-five members in 1880, comprising botanists, chemists, pharmacists and physicians in nearly equal numbers. To these were added one representative from each of the medical departments of the Federal Government: the Army, the Navy, and the Marine-Hospital Service. The National Committee on Revision is elected by a convention constituted by delegates from incorporated medical and pharmaceutic societies and colleges, which meet in the city of Washington, D. C., decennially. This convention also adopts rules and principles for the instruction and guidance of the Committee on Revision. The next convention will assemble in Washington in May 1900. From this brief résumé of the history of pharmacopeias it will be observed that a pharmacopeia is essential to every civilized country, and the work of revision is one of great interest and importance. Although the United States Pharmacopeia has never been legalized through National enactments, it is recognized as the legal standard in all legislative enactments of the various States pertaining to the practice of pharmacy and the prevention of adulterations in drugs and medicines. It is therefore *de facto* the legal standard for the entire United States as much as though its authority had been declared by congressional *fiat*. No especial attempt has so far been made to legalize the pharmacopeia, through the Congress of the United States, but since the National Government is represented in its creation and accepts its standards quite as readily as do the State and local governments, there may be no need for the Federal insignia, at least not until a National department of health is created.

The "United States Parmacopeia" may be defined as an authorative compilation or work creating: 1, standards for the identification, purity, strength and quality, and 2, giving directions, for the purification, valuation, preparation, compounding and preservation of drugs, chemicals and medicinal substances."

The French pharmacopeia is also called the "Codex Medicamentarius." This last title expresses the scope and functions of a pharmacopeia better than any other. It should be the pharmacal code for physicians and pharmacists alike. With a pharmacopeia as up to date as its periodic revision admits, with thoroughly educated and experienced pharmacists, the physician is assured not only of uniformity in product, strength, purity and quality but also that such medicines will be prepared according to the best and most advanced methods of the pharmacal arts.

While the "United States Pharmacopeia," from a scientific

[1] Journal of the American Medical Association, Vol. xxvii.

standpoint is undeniably in advance of all other pharmacopeias, yet it lacks certain features to render it more serviceable, and consequently more generally acceptable to the medical practitioners. The first of these deficiencies is in the pharmaceutic preparations, particularly in such classes as are of solid form and also such as are intended for external use. Another deficiency is that the revised edition does not with sufficient accuracy contain as many new substances as have fairly proved their efficacy, promise and utility as therapeutic agents, as it should. Thirdly it lacks certain general information which should be incorporated as an authoritative guide to the more intelligent use and application of various remedies. In this last category should be included the maximum dose of all toxic and potent substances and their preparations. While pharmacology (or the science devoted to the action of drugs) and therapeusis (or the science devoted to the indications for and selection of remedies), are not within the scope or functions of a pharmacopeia, still the certain safe and accurate method of exhibition and administration of remedies can not be realized unless their respective forms be based upon these fundamental considerations. It is not otherwise possible to realize the motto of Asclepiades, *cito, tuto, jucunde.*

Whatever improvement be necessary in the new pharmacopeia, in the direction of its greater therapeutic utility, must come from medical men. There may be superfluity of remedial substances in a pharmacopeia while no authoritative forms for their administration are given. On the other hand, the preparations though made after elaborate processes may be so defective as to impair their therapeutic usefulness. This is particularly true of solid preparations, especially those intended for external use, while nearly one-half of the 1000 articles of the "United States Pharmacopeia" are preparations, these comprise but thirty-three classes, and of these only eleven are solids, six for internal and five for external use.

The French pharmacopeia has sixty-four classes in which there are thirty-four solids, eighteen for internal and sixteen for external use. The British pharmacopeia has thirty five classes including thirteen solids, four for internal and nine for external use. It is particularly strong in ointments, having forty-four, and is the only pharmacopeia in which an attempt has been made to discriminate as to the selection of the vehicle employed for ointments of varying use. The German pharmacopeia has forty-five classes with twenty-two general formulæ giving directions for compounding any number of as many different classes of preparations. There are twenty-three classes of solids about equally divided into preparations for external and internal use.

While a compilation of about five hundred formulæ for preparations of a polypharmacal or ephemeral character was published by the American Pharmaceutical Association in 1887 and revised in 1895 under the title "The National Formulary," this work does not carry authority as a standard like the pharmacopeia. The "National Formulary" has been exceedingly useful in introducing greater uniformity into such preparations as elixirs, syrups, pills, etc., but its utility is hampered through the difficulty of acquainting physicians with a semi-official work. Familiarity with and adherence to accepted standards are more likely to be secured through one comprehensive work of official character than through several.

From these observations the following suggestions are offered for the work of the revision in these respective special departments of medicine:

DISEASES OF THE EYE.

Identification and determination of comparative value of the mydriatic alkaloids, with especial reference to those of the solanaceous plants and their derivatives.

Formulas for collyria, especially solvents.

Investigation of the employment of the lamellæ (gelatin-disks) containing alkaloids for solution in the eye, instead of water solutions.

List of ointments used and character of vehicle employed, with reference to the preference of the paraffins to the more absorbable animal and vegetable fats.

DISEASES OF THE EAR, NOSE AND THROAT.

Report on antiseptics, anesthetics, anodyns, absorbents, astringents, demulcents, emollients and protectives used in substance or in the following forms, with especial reference to solvent or vehicle used: Gargles, insufflations, injections, lotions, oleates, pastilles, tablets, troches, vapors, cereoli (antrophore), pastes, electuary, confection, sprays, oils (medicated), stylus, suppositories, cigarettes, papers (fumigating) (inhalant), ointments, cerates, plasters.

SKIN AND GENITO-URINARY DISEASES.

Report on antiseptics, astringents, absorbents, anesthetics, anodyn, caustic, hemostatics, parasiticides, protectives, rubifacients, styptics and vesicants used in substance or in the following forms, with especial reference to solvent or vehicle; also comparative study of vehicles as to ratio of absorption and classification of ointments, cerates, suppositories, plasters and unctuous preparations for external use: Baths, cataplasms, caustics, crayons, sponges (prepared), fomentations, oils (medicated), enemas, lotions, powders, soaps, solutions, injections, suppositories, cotton, gauze, pomades, ointments, cereoli (antrophore), stylus, cerates, plasters, plaster mulls.

DISCUSSION.

Dr. WM. L. BAUM—I have always thought that the interest taken by the medical profession in formulating a new pharmacopeia was entirely inadequate to the needs of the time, and I can say truly that in our specialty of dermatology and genito-urinary diseases, a great improvement could be made, especially in the matter of ointments. The ointments that are prescribed today are of various kinds, as Professor Hallberg has pointed out, those in which it is intended that the base should be absorbed, and others where the ointment is simply used as a protection to the external integument, *i. e.*, those whose therapeutic value does not depend upon the direct resorption of the medicament. There should be a division of ointments into classes. They should be classified as to whether they are intended as absorptive agents or as local protective applications. This should not be a very difficult task, in the light of the work that has been accomplished, especially in this specialty. We have at our command a large quantity of material which has been collected by laborious research work in the laboratory and in hospitals by eminent men throughout the world, giving the quantities of the base resorbed of ointments made up with different vehicles. There are many changes that could be very profitably brought about in the matter of emplastrums; here we also wish to have an absorptive element as the main feature of the plaster. The plaster, owing to the manner of its preparation, fails to carry out the therapeutic intention; that is, we have compact plasters where we should have plasters which will allow the free circulation of air, so that instead of having a plaster in which the active therapeutic agent is resorbed, we frequently find laceration of the skin. In the matter of the various preparations which are used in genito-urinary work, the pharmacist loses sight of the fact that the physician wishes to have a distinct therapeutic action exerted upon the genito-urinary apparatus. The genito-urinary tract is not an absorptive mucous membrane, or best to a very slight extent, so that preparations employed in this direction should contain but little of the oil and lard preparations, but should be such as will enter into active combination with the normal secretions of these membranes. While we do not get a good therapeutic action from the various ointments that are injected into the genito-urinary tract, a smaller quantity would give the same therapeutic effect if made up of demulcents, or some vehicle which enters into active combination. I have long ago discarded the formulæ of the "U. S. Pharmacopeia." I prefer to write out directions for the druggist as to the preparation of all ointments and remedial agents applied to the genito-urinary tract proper. It is but fitting that the medical profession should take an active interest in the formulation of the various methods of pharmacal preparation upon which much of the success of therapeutic measures depends.

Dr. C. D. WESCOTT—We have reason to think that it makes much more difference how a thing is prepared that goes into the eye than in regard to preparations that are used upon the skin, or that go into the stomach or rectum. It is here that small things are more important than in some other places. In regard to the preparation of collyria, it should be almost criminal for a druggist, in these days, not to prepare such a solution in a clear and sterilized condition. To illustrate the importance of having the solution for application to the eye sterile and free from visible particles, patients have frequently come to me with the story that the eye drops which I had prescribed were irritating to the eye, and brought me the bottle to have me tell them if that was the proper thing and what I had ordered. Such solutions, prepared by druggists about town, have frequently contained sediment or particles of dirt. It is not simply a light flocculent sediment, such as may be precipitated from lake water on standing, but visible particles of dirt. Any one of these particles would be regarded as a foreign body resting on the cornea, and would be irritating if under the lid. After I have boiled and filtered these same solutions, they have been used without any irritation or trouble. There should be a rule by which druggists should prepare collyria with boiling water, and they should be filtered while hot and given to the patient in a sterilized condition. Then it rests with the oculist to give such instructions that they shall remain sterile.

In regard to the discs, I quite agree with Professor Hallberg that they should be recognized in our Pharmacopeia, and my experience teaches me that gelatin is the best excipient for the manufacture of these discs. My experience would also indicate that zinc salts and other similar compounds should not be used in this form. We have quite a number of discs of this sort, prepared by the John Wyeth Company. The discs which contain cocain, atropin and eserin, and other active principles of drugs, with gelatin as the excipient, give us remarkable satisfaction. As Professor Hallberg has said, they keep the drug in a permanent condition; there is no danger of decomposition or of alteration whatever, and the application of drugs to the eye in that form is advantageous. But some of the discs with which we have been furnished have something else as the vehicle; perhaps it is boric acid, and those discs have been irritating. A gelatin disc, containing a minute dose of eserin, is not very irritating; but put up in the other way with boric acid it is. I once applied a disc containing a minute quantity of sulphate of zinc, and the experience was very painful to the patient and disgusting to me. Such a thing is not to be tolerated. So the revisers of the Pharmacopeia should have specific advice in regard to these points.

With reference to the ointments to go into the eye, we have all had sad experiences in this direction. One of the commonest ointments which we employ is that made from the yellow oxid of mercury. It is possible to obtain an impalpable powder of the yellow oxid, and when mixed with pure vaselin or lanolin in a proper way, it is absolutely smooth and unirritating to the conjunctiva; but unless we send our patients to a druggist in whom we have absolute confidence, and who has been repeatedly cautioned in regard to these ointments, we get mixtures that are positively harmful. We get mixtures in which we can see, with the unaided eye, palpable particles of the yellow oxid, which, lodging upon the surface of the cornea, act as cauterizing masses, and patients have come back, especially those who do not heed the directions of the oculist in regard to going to certain druggists for the ointment, with fearful irritability of the eyes and with the ointment to show.

In regard to excipients again, I have had various experiences which indicate that some of the things which come under the head of vaselin and petrolatum are not pure, and I have been told that some of the white vaselins are bleached with sulphuric acid. I may not have been properly informed in regard to this point; but at all events they are prepared in an improper way and are very irritating to the eye. There should be some absolute rule with regard to the preparation of vehicles for ointments that go into the eye, so that if a petrolatum preparation is used it will be absolutely pure and non-irritating. In order to avoid the irritating properties of vaselins I began, when lanolin was introduced, to use it as the vehicle for eye ointments. At first lanolin seemed to act very well, and then I found that it became rancid like other animal fats, and I once applied some old yellow oxid ointment with lanolin as the vehicle to my own eye, and was much surprised to get considerable burning; so I have discarded lanolin. Recently I was informed that lanolin is sometimes irritating because it is not made in a proper way and contains a free acid. It seems to me that much will be done to aid specialists in diseases of the eye, if we may have standard directions in our new edition of the Pharmacopeia in regard to the preparations that I have mentioned.

Dr. George F. Butler—There is room for improvement in the Pharmacopeia, although in some respects the present edition is superior to the older editions. In spite of the faults, however, physicians would succeed better if they adhered more closely to the pharmacal preparations. Sometimes our failures are due to unreliable preparations, through the fault of the druggist, but I believe the average druggist is as honest as the average physician.

Many physicians know nothing about pharmacy. While they have learned by experience that in certain conditions various preparations are more active than others of the same drug, they are ignorant of the reason for this difference. It takes skilled pharmacists to instruct them in this particular. The suggestion, therefore, that a radical change be made in the next Pharmacopeia, and that it be the result of the combined effort of skilled clinicians and pharmacists, is an excellent one. Many drugs and preparations should be added to the next edition, and possibly some that are already official should be omitted. Within the past ten years a number of very important medicinal agents have been brought to the attention of the profession which are deserving of a place in the Pharmacopeia.

A few thoughts occurred to me while Dr. Wescott was speaking as to some of the reasons for our frequent failures in therapeutics, not so much the fault of the Pharmacopeia as that of the druggist. Dr. Wescott spoke of infected solutions aggravating eye troubles. We have similar difficulties with internal remedies. Those of us who practice general medicine know, for instance, how valuable an agent chalk mixture is in certain cases of diarrhea. Perhaps some of the gentlemen present have given this remedy where it was unquestionably indicated, and found the symptoms markedly intensified after its administration. The difficulty was not in the selection of the wrong remedy, but of an impure, infected preparation. Cinnamon water, from which the chalk mixture is prepared, becomes upon long exposure contaminated with microscopic plants, which aggravate the intestinal trouble.

The Pharmacopeia directs how preparations should be concocted, and kept; yet how frequently these directions are disregarded.

As I remarked before, the fault is not with the Pharmacopeia in such cases, but with the carelessness or dishonesty of the druggist.

Considering the physician's ignorance of materia medica and the physiologic action of drugs, and the adoption and administration of various nostrums recommended by the profession as panaceas, together with the unreliable pharmacopeial preparations which too many druggists dispense, it is no wonder there are so many failures in our treatment.

It is high time for the advanced and aggressive physicians and pharmacists to unite, and endeavor in every way to counteract the prevailing tendency toward therapeutic nihilism. One way is to popularize the Pharmacopeia, and educate the physician to prescribe reliable pharmacopeial preparations, depending less upon the irrational therapeutic claims of the secret medicine manufacturer. The Pharmacopeia of the United States should be used as a text-book, not only in schools of pharmacy, but in those of medicine, so that every medical student may become thoroughly familiar with its contents.

The suggestion of Professor Hallberg as to classification is an excellent one. We are using drugs for the relief or cure of disease, and the only rational classification for a pharmacopeia, as well as for a materia medica, is a therapeutic one.

Dr. William F. Waugh—It is to be hoped when revision is made and the preparation of ointments, plasters, etc., is considered, that some experiments will be made as to the efficiency of the various preparations. I am inclined to think that some of the proprietary preparations are better than those of the pharmacopeia. For instance, I have never been able to get a plaster which would compare in efficiency and pleasantness for use with "canthos" plaster made by Johnson & Johnson. Knowing that in this we have a preparation of such undoubted efficacy, I trust the revisers of the Pharmacopeia will take it into consideration. As to gelatin discs, I fear that we have a comparatively limited number of agents which can be used in that way. Dr. Charles L. Mitchell of Philadelphia, who knew more about gelatin than anyone I ever met, was accustomed to say that nothing but experiments would show what would do in any new combination. He mixed gelatin with pepton for me once for rectal suppositories, and the patient wore them in his rectum all night and reproduced them in the morning without the slightest evidence of softening.

Dr. A. Lagorio—There is one point that I hope will be discussed a little more fully and that is the preparation of pills. We have pills which after a while become so hard that we can not break them. I remember purchasing a bottle of Blaud's pills, which were absolutely insoluble. Something should be done whereby these pills can be kept in good condition, also suitable excipients should be used in all the different kinds of pills, making them soft, pliable and easily dissolved. I agree with Dr. Butler that a good deal depends upon the honesty and dishonesty of pharmacists. I am fully in accord with the sentiment that physicians and pharmacists should come together and see what they can do toward improving the new Pharmacopeia. When it comes to the revision of the pharmaceutic and therapeutic parts of the Pharmacopeia the experience of every specialist in these branches will be of great value.

Dr. George F. Butler—While Dr. Lagorio was speaking I thought how careful the surgeon is to have his hands and instruments perfectly clean, in order to avoid the possibility of infection. If a surgeon infects a patient his conduct is looked upon almost as criminal carelessness, yet the physician pours medicines down the throat of his patient without regard to quality or purity, and with but little thought of the physiologic action of his drugs. If the physician would exercise one-half the care in the treatment of his patients that the surgeon does in his operations we should have fifty times better success. Just so long as physicians are lax in these matters, just so long will our patients suffer and die from improper treatment and surgeons and the laity will have some justification in their accusation that "there is nothing in drugs." There is a great deal in proper therapeutics. Compare the surgical methods

of fifty years ago with the operations of today. Are the present results due entirely to the skill of the operator? No; but to cleanliness and *drugs*—anesthetics and antiseptics. There is room for similar improvement in internal medicine, and it is now imperative that we should awaken to this fact and do away, as it were, with the red-hot iron and swab of melted pitch, devoting more time and thought to pharmacology, pharmacy and rational therapeutics.

Dr. J. G. KIERNAN—If every prescription bore the proper directions and the preparation be ordered made according to the "U. S. P.," some of the abuses to which Dr. Wescott referred might be guarded against. Furthermore, if prescriptions be not put up in a particular manner, or as specified, it seems to me that penalties could be enforced against the individual for not complying with the directions of the physician. As it is, without some such directions we afford a leeway for unscrupulous druggists. With regard to the points directly involved in the pharmacopeia, very little can be added to what has already been said. With reference to the question of pills, a number of points might be raised. There is no doubt that in certain nervous conditions sugar-coated pills will be absorbed when gelatin-coated pills will not. In certain cases of hysteria and melancholia we will every now and then find that by giving sugar-coated pills, drugs produce their effects, while the gelatin covered pills pass the rectum unchanged. These are questions that will have to be settled by careful experimentation. The point brought up by one of the Fellows in regard to the pharmacopeia not being one of cosmetic pharmacy but one of therapeutic pharmacy, is well taken. There are a number of points that could be raised along the lines of the various specialties, particularly with reference to the specialty of nervous diseases, but which also involve the genito-urinary specialty and also that specialty from the standpoint of the syphilographer. Many of the questions about ointments are particularly pertinent. Some years ago when the question of lanolin came up, a Fellow of the Academy, now deceased, held the opinion that the vehicle did not make much difference; that the petrolatum of the pharmacopeia and the indefinite and proprietary vaselins and paraffins meant approximately the same thing. Professor Hallberg made a blue ointment with lanolin for inunction purposes, of which he gave me a sample and of which I gave this Fellow of the Academy also a sample. He had a patient with pediculus pubis and gave him lanolin preparation, with which he succeeded in killing the pediculi but salivated the patient considerably. That experiment and a number others would indicate the line that should be followed with reference to ointments. Then there was another question raised by a Fellow of the Academy, who is unable to be present tonight on account of illness, regarding the parasites and parasiticides. He pointed out that the itch insect was more or less given to living to a certain degree on the sebum, consequently a preparation made of lanolin would not be as toxic to the acarus as one made of lard or some other preparation, and that therefore some of the ointments, like the sulphur ointments, which were intended to reach the itch, might be better made from lard and preparations of that kind. This is only one of a dozen suggestions that might be made along the same line. I think, however, the old conception of the authors of the pharmacopeia should be carried out. We forget how high these men stood, not only in medical science but in general science. I am referring now particularly to those who were prominent in originating the Pharmacopeia of the United States. The two first dispensatories contain therapeutic hints which, if followed long ago, would have saved a great many lives. One of them, for example, Thatcher's "Dispensatory," contains an excellent description of Brand's method of treating typhoid fever with cold water, a form of treatment charged to the credit of the other side of the water. Professor Hallberg quoted Samuel L. Mitchell. If there ever was an unrecognized scholar in medicine it was he. If we go back and read the old "New York Medical Repository" and Mitchell's introduction to Erasmus Darwin's "Zoonomia," which went through nine American editions, we would see how high the earlier American physicians stood, especially those who were prominent in the production of "Tilton's Pharmacopeia" and also of the "Pharmacopeia of the Massachusetts Medical Society." The latter contains bryonia, aconite and other things whose use the eclectics and homeopaths claim to have originated, but really took from works of this character. Mitchell was a biologist. He was a student of physiology, geology and of evolution. His preface to Charles Darwin's grandfather's "Zoonomia" showed that he and his medical contemporaries belonged to a cultured set. These people appreciated the necessity to the physician of the pharmacopeia, and from their labors grew up this decimal pharmacopeia. But latterly, when Philistinism came into vogue in America, this whole question of the pharmacopeia fell into the hands of the pharmacists alone, who, of necessity, had to deal with it purely from the standpoint of pharmacy. It seems to me, Americans should, in taking a forward step, go back to the old period when they took so much interest in general science. This would be a good beginning along that line. With all our modern pathologic and bacteriologic work we have gone back to the old workers on biology, and it is a good thing to follow their example along a therapeutic standpoint as well.

PROFESSOR HALLBERG (closing the discussion)—The general sentiment seems to be directly in line with the suggestions offered, and I can only emphasize from my limited sphere of observation as a pharmacist many of the charges that have been made with reference to careless and faulty preparations. Right here is where the general formulæ for a great many different preparations would be of great service. If the Pharmacopeia had a general formula for the preparation of collyria, for example, it does not need to enumerate a great number of different collyria. It may give one or two examples, but also must dictate the official process and method by which the collyria shall be prepared. This certainly would be very valuable. Dr. Butler's reference to chalk mixture and cinnamon water is susceptible of different interpretations. Chalk mixture very quickly spoils in summer. If a prescription is to be repeated and the bottle containing the mixture be brought back to be refilled the chances are that the mixture will quickly ferment when put in the second time. A bottle should never be used a second time for chalk mixture, because chalk mixture is exhibited during the heated season. Preferably a new bottle should be used. The point made about cinnamon water and the careful surgeon keeping everything aseptic is a good one that has to be impressed upon the younger pharmacists with great emphasis. The rising generation of pharmacists does not seem to have the least conception of what is proper. In my position as teacher and conductor of laboratory classes at the Illinois University College of Pharmacy I have the greatest difficulty in warning students against vulgar behavior, such as picking teeth or sticking fingers in ears while at work, perhaps while making pills, folding powders, and against general uncleanliness of that character. As I do not know what Dr. Waugh has been in the habit of using as cantharidal plaster I will prepare a plaster of the official cantharides cerate that will bring about the desired result much quicker than any proprietary preparation. If there be any perfect preparation in the Pharmacopeia it is the cantharides cerate, when properly made and thickly spread. Gelatin is a vehicle which is not adapted to a great many substances, although Dr. Mitchell has made a success of it. He is one of the largest operators now of gelatin plates for photography in this country, and so he has worked gelatin to its full extent. As to the question of pills, I purposely picked out ointments as a starting point. I should be glad to have the Academy appoint a committee to take up the work that has been suggested, because the Fellows are specialists in these branches. Some one should be appointed to take charge of the mixtures for internal use, represented by the pills and their modifications, powders, capsules, etc. I would be glad to make up a similar compilation on pills and other preparations for like use, on some such plan as that for ointments. Some compound cathartic pills made twelve years ago are as hard as rocks, but they are of resinous extracts, such as colocynth and jalap, calomel and gamboge. This pill will pass through the stomach intact without any doubt, but when it gets into the intestines and the alkaline secretions, there come in contact with the pill, they act as a solvent upon the soap in the mass; the soap swells, the pill becomes disintegrated, these resinous constituents slowly and gradually dissolve and produce their desired effect, and in this manner the irritation is gradual and not sudden. I am satisfied pills of that kind are far more desirable and produce evacuation much less painfully than the pills advertised by means of an illustration, which I have characterized as "boiler-shop pharmacy," the pills being represented so hard that they can be driven through a plank with a hammer. That is a therapeutic as well as a physical monstrosity. Last year I had occasion to investigate this subject. I tried various forms of pills, the hard compound cathartic pills, a great many other kinds, and also the "friable pills." I found by treating them with a digestive fluid, which consisted of a little ox gall, sodium chlorid and bicarbonate, that the exceedingly hard, rock-like pills disintegrated and dissolved quickly and completely, while the friable masses did not disintegrate so rapidly, and even after three hours, at body temperature, they were still undissolved, leaving a residue of from 25 to 50 per cent.

I was much pleased to hear the frankness and emphasis with which Dr. Dickerman endorsed the project of the new Pharma-

copeia, saying that the Pharmacopeia should be more adapted for reference by the physician. The great trouble with both medical and pharmaceutic practice in this country at the present time, and for several years past, is that the average medical student does not obtain information concerning official remedies. His information is obtained chiefly from text-books or from teachers who often have an inadequate conception of pharmacy, even though teachers of materia medica. I remember some twenty years ago seeing a professor of materia medica place on the table, when lecturing on tonics, "Plantation Bitters" and "Hostetter's Bitters," using these as typic preparations of bitters and tonics. It is not much better today. Physicians seem to know more about the multitudinous proprietary articles than they do about the official preparations.

There should be no objection to some kind of supplementary therapeutic classification in the Pharmacopeia to which reference could be made. I do not think the Pharmacopeia of the United States should be placed in the hands of the pharmacists alone for revision. At the last convention a number of medical men were placed on the committee, but only one from Chicago attended the meeting. I do not advocate directions in the Pharmacopeia as to therapeutic indications of any drug or preparations. The point I want to emphasize is that the work of revision should consider the therapeutic usage of these respective preparations, heretofore formulated almost entirely from a pharmaceutic point of view. If a certain agent were to be used, it was only a question as to what vehicle would make the best or smoothest mixture, or in the case of an ointment present a nice, elegant appearance, one that would be stable and otherwise be superficially satisfactory. Physicians have not taken the active part in the work of the Pharmacopeia in recent years that they did in the beginning. Pharmacists have been left almost entirely to their own resources in formulating these preparations. They are not necessarily familiar with the conditions that are involved. It is for that reason medical men, and especially specialists, should take up the various preparations and make such changes and modifications in the vehicles as are suggested from a therapeutic standpoint.

I hope the coming revision of 1900 will be as far in advance of the present one as the present one was in advance of the one issued in 1880.

A committee, consisting of Drs. Baum, Butler, Brower, Cuthbertson, Dickerman, Fütterer, Hallberg, Kiernan, Lagorio, Moyer, Pinckard and Wescott was appointed to assist in revising the next Pharmacopeia, with full power to act.

Chicago Medical Society.

Weekly Meeting, March 16, 1898.

Dr. Arthur D. Bevan reported a case in which he showed the value of specific treatment in syphilitic fracture cases. The boy was 14 years of age. The case was presented as a bit of evidence showing distinctly the value of antisyphilitic treatment in cases of fracture in syphilitic individuals. He was glad of the opportunity of showing such a case because several times, in a medico-legal way, the question had been presented to him as to whether he had any definite evidence that syphilis delayed union or prevented it in cases of fracture. The present case was submitted as evidence that syphilis does delay union and prevent it, because the two operations were indentical. After the first operation union failed to take place, but after the second, and the use of antisyphilitic treatment, the bones were found in perfect approximation with good, firm union.

Dr. Effa A. Davis reported three cases of tetany, which presented the characteristics of that disease. One of the patients was exhibited.

Dr. Clara Ferguson showed cases of Friedreich's disease and hemiplegia.

Dr. J. Holinger showed a case of hydrorrhea nasi in a woman 28 years of age, married, and mother of three children. There is no disease of the upper air-passages. During the first month of her first pregnancy, about five years ago, she caught cold in the nose, which gradually grew worse, so that at the present time the discharge from both nostrils is quite profuse. She uses from twelve to eighteen handkerchiefs daily. She is perfectly well otherwise. Secretions from the nose were examined bacteriologically and found to be negative.

Dr. John Ridlon showed an interesting case of anterior poliomyelitis complicated with dislocation of the hip-joint.

Dr. D. W. Graham exhibited a case of double congenital luxation of the hip-joints.

Dr. D. N. Eisendrath exhibited a babe, born February 23, with encephalocele, which was produced by a midwife in delivering the woman.

Dr. Bevan showed a specimen of large sarcoma of the kidney, removed about two months ago. He also exhibited a surgical kidney removed from a man 37 years of age, who, at the age of 14, received a crushing injury to the pelvic bones, the urethra and triangular ligament, producing extensive traumatic stricture. The case showed how a purely mechanical cause may produce an extensive lesion, resulting in death of the patient.

PRACTICAL NOTES.

Methyl Spray in the Vomiting of Pregnancy.—Lefour reports a serious case cured with energetic spraying the entire length of the spine with methyl chlorid.—*Sem. Méd.*, February 53.

Powder for Painful Ulcers of the Cervix.—Insufflate on the cervix, through a speculum, the following powder, and tampon: Tannin, 2 grams; lycopodium, 5 grams; europhen, 10 grams; compound opium powder, 5 grams.—Lutaud, *Journ. de M. de P.*, February 27.

For the Incontinence of Urine and Fecal Matters in General Paralysis, Athanassio recommends the following: Potassio-ferric tartrate, 1 gram; tincture of nux vomica, xv to xx drops; decoction of krameria and decoction of cinchona, āā 100 grams; to be taken by tablespoonfuls during the twenty-four hours.—*Semaine Méd.*, February 23.

Formol in Axillary and Palmar Hyperidrosis.—Unna recommends a salve containing ten to twenty grams of the commercial solution of formol combined with thirty grams of lanolin or vaselin. It diminishes the amount of perspiration and abolishes the odor, but radical cures are extremely rare.—*Sem. Méd.*, February 23.

Hair Tonic.—Dietrich recommends the following wash: Quinin hydrochlorate, 4 grams; tannin, 10 grams; alcohol (60 per cent.) 880 grams; tincture of cantharides, 10 grams; pure glycerin, 60 grams; Cologne water, 40 grams; vanillin, 10 centigrams; pulv. sandal wood, 5 centigrams. For external use. Set aside five days and filter. Apply and rub well into the scalp every other day.—*Prog. Méd.*, February 36.

Combined Thyroid and Thymus Treatment had been found much more effective than the thyroid alone in cases of struma, by Gaibissi, who also states that it was not followed by any of the occasional secondary effects of the thyroid alone. He administered twice as much of the thymus as of the thyroid preparations, suspending all treatment every few days.—*Klin. therap. Woch.*, March 6.

Prophylaxis of Menorrhagia after Childbirth.—Pinard advises vaginal irrigations with two liters of boiled water at 50 degrees C., as a preventive of the excessive menstruation that frequently accompanies the return of the menses when the mother does not nurse the child. The irrigations are made morning and evening, but in case of established menorrhagia three or four times a day.—*Méd. Mod.*, February.

Severe Icterus After the Use of Lactophenin.—L. Hahn reports that he has been using lactophenin for a year and a half with great satisfaction, especially in ileotyphus and for children, as it reduces the fever and restlessness without affecting the pulse or strength. But he has witnessed the development of two cases of severe icterus in consequence of its use, making sixteen now on record.—*Deutsche Med. Woch.*, March 3.

Tingling Symptom in Scarlet Fever.—A new clinical symptom has been noted in scarlet fever, appearing with the eruption, exceptionally preceding it: a transient sensation of heaviness and tingling in the hands, rarely in the feet. It was noted seventy-nine times in 100 cases in adults, usually ascribed by the patient to an uncomfortable position in bed. It may prove an aid in the diagnosis of deceptive cases, especially in the retrospective diagnosis when the eruption was imperceptible.

It has never been found in other eruptions.—*Presse Méd.*, March 5.

Surgery of the Sacro-iliac Articulation, for Caries.—Rieder reports in the *Deu. Med. Woch.* for February 10, a case of extensive tuberculosis of the sacro-iliac symphysis and os innominatum, successfully operated with a large incision entirely encircling the latter, to open up all the spaces into which the pus might have found its way downward. He is inclined to attribute much of the success to the after-treatment with the permanent bath, which rendered bandages, etc., unnecessary and induced rapid and perfect granulation, with no effort nor pain on the part of the patient, who now walks without a cane and with scarcely any defect perceptible in his gait. Rieder notes that in damage cases after trauma the sacro-iliac synchondrosis should be carefully examined before admitting the idea of simulation. The quite pronounced atrophy of the lower extremity on the affected side is frequently a guide in such cases. He advises in operating that a wide opening be made in the pelvic floor near the rectum, to allow the freest possible outlet to the pus.

Local Treatment of Articular Rheumatism.—Painting the articulations with methyl salicylate relieves the pain rapidly. Cover with oiled silk and cotton to prevent evaporation; or the following salve can be used: Liquid vaselin, 20 grams; methyl salicylate, 12 grams. If the wintergreen odor is disagreeable, salicylic acid can be substituted, although less effective: Vaselin, 20 grams; salicylic acid, 4 grams. Or the combination: Vaselin, 25 grams; salicylic acid, 4 grams; sodium salicylate, 3 grams; extract of belladonna, 1 gram. Guaiacol has a pronounced antithermic effect and rapidly soothes the pain. It can be applied pure, but it is best to use one gram at a time in 5 grams of 85 per cent. alcohol; or it can be mixed with vaselin: Vaselin, 25 grams; guaiacol, 4 grams. The following combination is very effective but has a disagreeable odor: Vaselin, 30 grams; methyl salicylate, 5 grams; salicylic acid, 2 grams; guaiacol, 4 grams. All of these substances are readily absorbed by the skin.—G. Lemoine in the *Nord Méd.*, February 1.

Medicines that Should Not be Prescribed in Powders can be classified into: 1, those that absorb moisture readily from the air; 2, those which form a fluid in combination with other substances; and 3, those that are decomposed by the oxygen of the air and change color. In the first class belong the acid phosphates and their derivatives, the phosphoglycerates. These salts put up in powders liquefy in twenty-four hours; also sodium bromid, which is extremely deliquescent; crystallized calcium chlorid; strontium chlorid; ammoniac citrate of iron and ferrico-potassic tartrate; piperazin and lysidin; chloral, dry vegetable extracts and, in general, all products prepared by evaporation in a vacuum, especially, dessicated peptones and extracts of animal organs. The second group includes the substances that alone are not affected by the air, but combined, absorb moisture rapidly; such are antipyrin and sodium salicylate. The third group comprises the alkaline and ferro-alkaline iodids and the aristols. A little trick that sometimes prevents trouble is to add a certain amount of licorice powder or cinchona; also to keep the powders in an air-tight glass jar. —*Journ. de M. de P.*, February 27.

Fasting as a Cure for Acute Infections.—Professor de Dominicis has been forced to the conclusion that the mysterious cause which transforms inoffensive bacteria passing harmlessly through the organism, into virulent pathogenic germs, is the failure of the digestive apparatus to dispose normally of the food. Even the simplest, scantiest diet will produce putrid decomposition if not digested, and the alimentary canal become a toxin factory and a fine culture-medium for the germs to acquire virulence in and entail serious complication. His extensive experimentation has established the fact that animals kept fasting, recovered far more rapidly and without complications from acute infections and severe traumatisms, than others in the same conditions, fed as usual or even much less than usual. He forbids all food to his patients in acute infections, especially in pneumonia, if there is any reason to suppose that the digestion will not proceed normally. Observations of 140 cases of pneumonia have confirmed the wisdom of this course, which has won for him the name of the "starving doctor." In every case it was noted that during the prolonged fast, sometimes a week in length, the patient partially regained the strength he seemed to have entirely lost before. De Renzi "also places fasting in the front rank of the remedies for arthritism."—*Gaz. d. Osp. e d. Clin.*, February 6.

A Simple and Radical Treatment of Hydrocele has been followed by O. Bloch of Copenhagen for several years, in forty cases, which is effective, radical, painless, and allows the patient to resume his usual occupation almost at once. After chloroform, the scrotum is incised sufficiently to disclose the testes completely. The tunica vaginalis is then turned back its entire extent, excresences on its internal surface removed, and this entire surface energetically frictioned, even into its remotest crevices, as also the surface of the testicle, with sterilized gauze impregnated with 3 per cent. phenicated water. The phenic acid coagulates the albumin in the epithelium of the serous membrane, so that it ceases to secrete liquid. The testicle is then reduced, the serous cavity tamponed with a strip of gauze, left protruding, and a simple anti- or aseptic dressing applied. Three or four days later the gauze is removed and the wound sutured, including only the skin, and the patient dismissed with a simple suspensory to be worn for a while. All his patients have been examined recently, the time that has elapsed varying from eight months to five years. Only one case relapsed. In this the hydrocele had existed two years, and was as large as a child's head and so painful that the frictioning was less thorough than usual.—*Revue de Chirurgie*, February 10.

The Cataract of Glass-Blowers.—J. Hirschberg in the *Berliner klinische Wochenschrift* comments upon the connection between cataract formation and occupations entailing exposure to intense heat as well as residence in hot climates, as having been long recognized. He contrasts the early age of the glass-blowers so affected with the late visitation upon the subjects of senile cataract. This difference, the writer says, ranges from forty years in the former class to that of sixty years in the latter. The heat exposures in India yield similar results of what might be styled as traumatismal. The late Dr. C. R. Agnew of New York was wont to cite cooks and stokers as his classical examples, but claimed that glare rather than heat was responsible for the result. Also in the ante-specialistic days, Dr. Willard Parker gave the dark-eyed as the preferred victims and females as the more constant sufferers. Thus there was no lack of observers although on somewhat divergent lines. Racial peculiarities of the darker skinned with their more torrid environments and heated apartments, with the eye strain of sewing, minute writing, etc., may be in reality the secondary developers. In this connection a well-known ophthalmologist of the Atlantic slope unhesitatingly maintains that but few over fifty years of age can be said to be immune from the cataract disqualification. To his mind the question, one of degree solely, belongs to the domain of prognosis rather than that of diagnosis. Might it not be said that the centrifugal influences inherent in all animals operate in the eye uniformly with the determination of pigmentary and like deposits to the surface? The phenomenon is most readily observed in transparent media and at the points of least resistance. The elaboration of the theory, however, is rather vague and better classifications may be more instructive in what are rated as the higher circles of civilization. Until then hygienic preventives will avail but little, although investigations are exceedingly fascinating. At all events let our statistics be free from prejudice and hasty conclusion.

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SATURDAY, APRIL 2, 1898.

THE DIAGNOSTIC VALUE OF LUMBAR PUNCTURE.

The operation of lumbar puncture, which has now been before the medical profession for some years, is now perhaps beginning to drop out of sight, or at least to be less prominent in medical literature than was the case two or three years ago. It is not meant by this to say that it is becoming obsolete or that all interest in it has been lost, for certainly that is not the case, but the zeal with which it was at first taken up has somewhat lessened as the novelty diminished with time and the claims of its therapeutic efficiency became less prominent. That it has not met the expectations of its advocates as a remedy for cerebro-spinal pressure in various conditions where it is abnormally increased seems to be a fact, notwithstanding the testimony as to its effectiveness in certain cases by very high authorities. That on the other hand it is coming to be recognized as a valuable diagnostic aid, is also true, and evidences of its worth in this special regard are still being multiplied. That, under proper antiseptic precautions, it is a perfectly safe procedure or so nearly such as to meet all reasonable objections on that score, may also be accepted as a demonstrated fact. Where the need of diagnostic data is clear and there is no substitute method of equal value available, there is no reason why this procedure should not be resorted to and only blame can attach to its neglect. In all forms of cerebral disease that are accompanied with pressure or irritative symptoms there is a possibility that lumbar puncture may afford revelations of the highest diagnostic importance and in some instances it almost alone can give the needed information. This is true more especially in dubious cases of meningitis where the symptoms may indicate possibly other conditions that would modify the prognosis and the treatment. In other respects it may also be of value as showing the presence in the cerebro-spinal fluid of various bacterial forms, tubercle bacilli pneumococci, staphylococci, etc. Altogether the introduction of the method has been, beyond question, an advance in both a practical and scientific point of view as regards diagnosis, whether or not it has any actual or considerable value as a therapeutic resource.

While lumbar puncture may often afford positive evidence of inflammatory conditions or the presence of irritative germs within the meninges, there is still a question sometimes whether, in the lack of positive proof, we can exclude these conditions from a negative finding in the operation. It is generally admitted that a turbidity of the cerebro-spinal fluid indicates meningeal disorder, but does a perfectly clear condition exclude it? This question is discussed at length by Dr. ARTHUR SCHIFF in a recent paper in the *Wiener klinische Wochenschrift* in which he exhaustively reviews the German literature of the subject. He finds that, according to numerous observations by QUINCKE, LICHTHEIM, FUERBRINGER, LENHARTZ and others, that while a turbid fluid is a certain sign of meningitis, which may be of tuberculous or other origin, a complete limpidity may coexist with various non-meningitic disorders (tumor, abscess, saturnism, chlorosis, etc.) and also with tuberculous meningitis itself and that therefore it can not be accepted as an adequate diagnostic sign of the absence of this affection. It may also be clear, however, with an encapsulated purulent meningitis, and apparently also, according to some observations, turbidity may be lacking in some cases of more generalized purulent inflammation. A negative finding in this regard can not, therefore, be accepted as absolutely conclusive as to the presence or absence of any generalized infectious process in the meninges.

Dr. SCHIFF in his communication calls attention to still another point which may be of diagnostic value in these cases, viz., the coagulability of the cerebro-spinal fluid. According to LICHTHEIM this feature of coagulability is present in all cases of purulent or tuberculous meningitis, and his opinion is supported by the observations of QUINCKE and SCHIFF, the latter going so far as to say that lacking this symptom we may correctly diagnose a non-meningitic condition. The fact that it has been neglected to a large extent as a diagnostic point is a little noteworthy under the circumstances. There may be exceptions, possibly, to the rule, and his view may be a little too positive, but from the data he gives from his own observations and those published by FLEISCHMANN it would appear that we have in this point of the coagulability or of the non-coagulability of the cerebro-spinal fluid a very important diagnostic aid, of special service when it is

desired to ascertain whether or not there are meningitic complications that may affect the prognosis of an otherwise indicated operation.

The operation of lumbar puncture is one that is not to be too recklessly resorted to, but as already stated, when other diagnostic methods are insufficient and it is important to ascertain the facts of a suspected general meningitic inflammation, it may afford data of the utmost value. As a therapeutic method its utility appears to be, if not altogether dubious, at least a limited one.

THE DIAGNOSIS OF ARTERIAL, MENINGEAL AND CEREBRAL DISEASE DUE TO SYPHILIS.

There are few problems in neurology which puzzle the specialist and the general practitioner more than the differential diagnosis of intracranial disease due to syphilis, except the symptoms be peculiarly frank and well developed. The difficulties in the case are also often greatly increased by the absolute denial on the part of the patient that he has ever been a victim of this specific infection, a denial which may be conscientiously made, for it is to be remembered that nervous syphilis often develops in persons many years after the primary infection and without any intermediate secondary lesions. Further than this it is not to be forgotten that syphilis may be innocently acquired, although such cases, in males at least, are rare.

The symptoms of intracranial syphilis closely resemble other forms of cephalic lesion and are doubtless often considered as true or simple meningitis, thrombosis or hemorrhage, yet a diagnosis of their specific origin, if made, will open possibilities of relief to the patient which are not to be considered when the results of non-syphilitic lesions are discussed. After advanced tissue changes are developed, even if their cause be syphilitic, curative treatment is largely unavailing, but before the pathologic process becomes hopeless great relief can be afforded by medical treatment. A very interesting and useful clinical paper has recently been written by TEISSIER and ROUX, in the *Archives de Neurologie*, for January and February 1898, on this topic, in which they consider, in an exhaustive manner, the differentiation of the various forms of syphilitic brain troubles such as arteritis, meningitis and gumma. It is evident that such a differentiation must be in many cases impossible, because it is not an uncommon occurrence for all these changes to be present in a case at one and the same time, but on the other hand if they be present singly these authors believe that they can be diagnosed with some certainty.

In regard to syphilitic cerebral arteritis it is a noteworthy fact that the symptoms of malnutrition of the nervous tissues are well developed, for the paralysis when it comes on is usually of the flaccid type with loss of the reflexes; and hemiplegia, or more often monoplegia, with partial involvement of groups of muscles, is the condition of the patient. TEISSIER and ROUX believe that these symptoms in a non-hysteric and previously healthy individual are very pathognomonic. Headache is comparatively rare, is diffuse, and not produced by pressure or tapping the vault of the skull, but there may be perverted sensation as of numbness of a limb or formication as prodromes of the onset of the paralysis just named. Optic neuritis is rarely seen in syphilitic arteritis although syphilitic lesions of the retinal vessels may be evident. Ocular palsies are rare and arise from secondary lesions as by the pressure of an aneurysmal growth on the nerve involved. The intelligence usually fails gradually, due to the impaired cerebral nutrition, and if any mental strain is present may rapidly give way for this reason. Transitory aphasia is an important symptom and is often associated with paralytic symptoms of one side of the face and of the right arm. Very rarely, when the arteritis has developed so far as to result in a thrombus with secondary degenerative changes in the pyramidal tract, the paralytic symptoms just named are spastic instead of flaccid.

When the specific poison attacks the meninges, however, the train of symptoms is quite different from that just described, for now the signs instead of being those of feebleness and atony are those of excitement and irritation. The paralyses are spastic, the reflexes are apt to be exaggerated, partial epileptiform attacks are frequent and the muscles affected are more numerous than when arteritis is the cause of the trouble. Headache is diffuse and constant and so severe as to cause delirium or suicidal tendencies and, unlike that due to arteritis, can be increased by pressure or light blows on the skull. Darting pains in the limbs may be present and areas of paresthesia, anesthesia or hyperesthesia are frequently found. These symptoms are not transitory as in arteritis, but persistent. Then again, optic neuritis, loss of pupillary reflex due to compression of the optic tracts with homonymous hemianopsia or amaurosis from this cause or sometimes bitemporal hemianopsia from pressure on the chiasm are to be found. The aphasic symptoms, which in arteritis are so fleeting, in meningitis are more permanent, and maniacal delirium may occur, but in the sane periods the intellect is not greatly enfeebled. When the inflammatory process in the meninges is acute and at the base of the brain, vomiting, paralysis of the cranial nerves and bulbar symptoms are present, and death comes in coma. It it be limited to the convexity of the brain noisy delirium, convulsions and finally hemiplegia or monoplegia with coma are present. When the condition is chronic the symptoms are more slow in onset but otherwise similar to those just described.

We must not forget that in some instances, as we have already stated, the combination of arteritis and meningitis or the presence of secondary vascular changes producing thrombosis with degeneration or pressure by aneurysmal growths may result in a mixture of the symptoms already detailed, and again that syphilitic pachymeningitis hemorrhagica with symptoms of cerebral hemorrhage may be present.

In syphilitic gumma of the brain choked disc is usual, hallucinations rare, distinct focal paralysis is common and headache is apt to be localized. The cranial nerves are paralyzed only if the growth is so situated as to press upon them, and the temperature is very rarely febrile, whereas in meningitis it is often raised.

THE DISSECTING ANEURYSMS OF THE HEART.

In our issue of March 12 (p. 626), we invited attention to the recent Memoir[1] of Dr. ARTUR VESTBERG concerning the pathologic anatomy of the dissecting aneurysms of the heart, from which the following interesting facts are abstracted.

As the result of these researches it has been established that there exists in the human heart a form of aneurysm which, because it is more or less analogous to the dissecting aneurysms of the vessels, may be quite properly designated as dissecting aneurysm of the heart.

The author defines a dissecting aneurysm of the heart as a pathologic cavity communicating with the heart itself or with the origin of the aorta, due to a separation by the pressure of the blood of the layers of tissue composing the walls of the heart.

The affection occurs in the four following varieties:

1. The parietal form, where the cavity of the aneurysm is situated between the layers of the free external walls of the heart.

2. The septal variety, where the aneurysm is situated in the wall of the interventricular or interauricular septum.

3. The valvular variety, in which the cavity occurs between the two lamellæ of a cardiac valve.

4. The interparietal variety, which occurs between the exterior surfaces of the walls of the various heart cavities, which normally are united by loose cellular tissue.

The last variety of dissecting aneurysm of the heart is the most common, and it occurs in the space which the author calls the peri-aortic space of the heart. As far as known this space has not been thoroughly described as yet. It is a subepicardial cellular space, the periphery or external wall of which is formed in part by the anterior wall of the auricles, in part by the *conus arteriosus dexter*. Its internal or central wall is formed, first by the lowermost part of the wall of the aorta; second, underneath this by the root of the aorta, which belongs to the heart according to its structure and which carries the attachments of the valves, under which again are formed the intervalvular spaces of Henle; third, by an inconstant parietal strip situated between the root of the aorta above and the fibrous zone of the mitral valve and the interventricular septum below; this strip should be considered as the wall of a *conus arteriosus sinister*. A loose cellular and adipose tissue fills the space mentioned.

A rupture of the central wall of this space, either from the left ventricle or from one of the sinuses of Valsalva, would allow the blood to penetrate into the space and the force under which the blood is confined would separate the walls one from the other and lift up the roof of the space, which is formed by the epicardium, and thus establish a dissecting aneurysm in all or part of the peri-aortic space. This then is the interparietal dissecting aneurysm of the heart.

From the peri-aortic space the blood could penetrate further between the leaflets of the ventricular septum or of the auricular septum, circumstances which render it impossible to separate precisely the interparietal dissecting aneurysms from the dissecting aneurysms of the septum. There exists on the other hand, transitions of the interparietal aneurysms to the parietal aneurysms, in that the peripheral wall of the space mentioned is interrupted by the coronary arteries, and here an aneurysm of the peri-aortic space could penetrate between the epicardium and the myocardium of the free external wall of the heart. The orifices of the coronary arteries separate that part of the peri-aortic space which is limited by the *conus dexter* from the part which is limited by the wall of the auricles.

The actual case which leads the author to study this interparietal form of dissecting aneurysm of the heart concerns a woman 32 years old who died from the consequences of chronic and acute ulcerous endocarditis. There was a partial rupture of the central or internal wall of the space, between the aortic valves (the posterior valve and the left valve), that is, at the base of the anterior mitral valve, with the formation of a dissecting aneurysm in the auricular part of the space. The aneurysm was of long standing, and had acquired a well marked secondary or new wall.

The author has collected from the literature fifty-nine cases of dissecting aneurysm of the heart, of which he gives a summary. Including his own case the total number becomes sixty. Forty-seven of these were interparietal or septal. It has already been said that it is impossible to separate precisely the one from the other. A few of these also presented partial transformation to the parietal type. Five aneurysms were parietal and eight valvular.

Among the interparietal cases the aneurysm occupied in twenty-five cases the auricular part; in thirteen the part of the cone, and in eight cases it was not possible to make special localization.

[1] ... dissekerande hjärtaneurismer, Nordiskt Medicinskt Archiv, Nos. 25 and 30, 1897.

Excluding the valvular cases the point of departure was one of the cavities of the heart in thirty-one cases, the left ventricle being the one involved in all the cases except one of parietal nature, which appeared over the right auricle. In sixteen cases the aneurysm took its origin from the sinus of Valsalva.

The cause of the lesion which allowed the blood to pass between the tissues composing the walls of the heart was in most cases an endocarditis, generally of an acute ulcerous nature. Sometimes an abscess appeared to have been preformed in the cavity of the aneurysms. In other cases the solution of continuity was produced on account of atheromatous changes in the aorta or by rupture of an ordinary aneurysm. In two cases the primary rupture was probably traumatic.

The interparietal aneurysms frequently present the form of a pouch, but they may occupy the larger part of the space, and then they take the form of the space. When the aneurysm is situated in the ventricular septum it can, exceptionally, become directed toward the cavity of the right ventricle, but it appears more often to cause a diffuse separation of the two leaflets of the septum toward the ventricular cavities. Sometimes this separation may extend throughout the entire extent of the septum.

The form of the opening of the aneurysm may be linear, especially when it is caused by rupture, or it may offer a more rounded form when the perforation is due to ulceration.

Aneurysms in the early stages naturally lack an independent wall, but in the chronic cases there is formed a secondary membranous wall. Frequently the contents are thrombotic.

Secondary rupture of the aneurysms occurs. Very often the rupture takes place into the cavities of the heart, causing abnormal communications between them. Very rarely the aneurysm ruptures into the pericardium.

Among the valvular cases two originated in the valves of the aorta, starting from the lumen of this vessel. Two were formed in the septal curtain of the tricuspid valve, and four were formed in the anterior mitral curtain.

THE DIFFERENTIATION OF THE ANEMIAS.

Not many years ago, physicians were as much accustomed to declare a patient "slightly anemic" as to ascribe the symptoms of another unfortunate to "a touch of the malaria." As we know that the latter disease exhibits different varieties and a vast number of anomalous symptoms, and that we are justified in making a diagnosis of ague only after finding the plasmodium in the blood, so we have learned that in anemia there are many forms whose symptoms are so similar that they can frequently be recognized only by most careful hematologic examination.

A thorough and systematic examination of the blood involves more time and skill than that of any other tissue of the body. Before one has accomplished such a feat he must have examined the fresh blood, dried and stained covers, counted the red and white corpuscles, estimated the amount of hemoglobin, the relative volumes of corpuscles and fluid portion of the blood (by means of the hematocrit), taken the specific gravity, and finally must have made a bacteriologic examination. In many cases an accurate diagnosis can be reached with but a small number of these steps, as for instance in malaria. The first "fresh" slide may reveal large numbers of the plasmodia, and as these parasites enter the substance of the red corpuscles causing their destruction, we would expect to find an accompanying anemia. But it is often of advantage to know the degree of corpuscular destruction. This can only be done by a count of the red cells. In certain of the infectious diseases the white elements of the blood are increased, in others diminished, while the reds may be considerably diminished in either. This difference in leucocyte count has often been of use in differentiating acute miliary tuberculosis from typhoid fever. Again, enough evidence may have been found to account for a simple anemia, but the patient not responding to appropriate treatment, a more extended examination may show that the disease is of the pernicious type. This specific gravity estimation is a method intending to replace the hemoglobin estimation with the Fleischl hemometer, while the hematocrit is offered as an apparatus by means of which the number of corpuscles can be approximately determined with rapidity. Bacteriologic examination in cases of suspected septicemia and pyemia is of evident value.

Now as to the anemias themselves. Too often this much abused expression is applied only to a lack of the red corpuscles, and the diagnosis is reached by a cursory glance at the roof of the mouth, the lips, or the conjunctivæ. Properly an anemia embraces much more than the above. It is a lessening of the whole quantity of blood, or of any of its more important constituents. A diminution in the amount of hemoglobin or of albumin might be correctly regarded as a variety of anemia. In classification one would first look at the grade of the anemia, best expressed by the number of the red elements. Secondly, it should be ascertained whether the anemia is accompanied by an increase or diminution in the number of the white cells—a leucocytosis or a leucopenia—and if leucocytosis, whether it is of a high or low grade. By means of the Thoma-Zeiss instrument, the number of red corpuscles in a fixed unit of volume (one cubic millimeter) is stated approximately in the male as 5,000,000, in the female as 4,500,000. Assuming that the red only are at fault, by putting a dividing line at 1,200,000, we make our first attempt at classifica-

tion: an anemia at or below this is of the primary or pernicious type (except after severe hemorrhage). However, the disease in question may be pernicious anemia, and yet the blood count be greatly above our dividing line. The secondary types, simple anemia and chlorosis, practically never have a count below 1,200,000. Therefore there may be cases in which a blood count would not distinguish between pernicious anemia and simple anemia and chlorosis. In simple anemia the hemoglobin is diminished *pari passu* with the loss in red corpuscles, for example, a count of 4,000,000 (in a male) will give 80 per cent. of hemoglobin, while in chlorosis the percentage is greatly lessened as compared with the count. A hemoglobin per cent. of 35 with a count of 4,000,000 is not an unusual conjunction. In pernicious anemia the hemoglobin is always below normal, yet when compared with the number of red corpuscles, it is apparently greatly increased. This comparison determines the so-called color index. Suppose a case with a blood count of 1,000,000 has a hemoglobin percentage of 30; if we could increase the count to 5,000,000, the hemoglobin would be raised to 150 per cent. Our color index in this case would then be one and a half. By these two methods of examination we would often be able to differentiate pernicious anemia, but other evidence should be obtained from stained specimens. In a slide from a case of pernicious anemia, probably the first point to attract attention is the variation in the size or shape of the red corpuscles. In many the disc shape is lost, and in those that retain it we may find corpuscles two or three times the diameter of their immediate neighbors. This is known as poikilocytosis and is extremely common in this disease. Another point evidenced is that of so-called polychromatophilia. Here, neighboring corpuscles show considerable variation in color. This reaction is best brought out with the triple stain, and is due to the fact that many of the reds, which normally respond only to the orange have taken on an affinity for the other colors of the mixture. Continuing, nucleated reds are seen, of two classes, the normoblasts, and the megaloblasts, giant forms with immense purplish or greenish nuclei. The latter are separated from the surrounding protoplasm by a narrow white (unstained) ring, are regarded as reversions to the fetal type and are found but rarely in other affections and then in small numbers. In hematology, however, we may make the diagnosis of pernicious anemia on this one finding: when the megaloblasts exceed in number the mormoblasts.

To summarize our findings of pernicious anemia: we have reds, about 1,200,000 or less per cubic millimeter, high color index, poikilocytosis, polychromatophilia and megaloblasts increased over normoblasts.

The second division of the anemias is that characterized by a diminution in the reds plus the presence or absence of a leucocytosis. A lessening of the red may be accompanied by a diminution in the white corpuscles, as occurs in malaria and typhoid. Therefore we may have a red corpuscular anemia accompanied by a leucopenia or diminution of white cells, as in pernicious anemia; a normal number of whites as in simple anemia, chlorosis and Hodgkin's disease; a leucocytosis of low grade, as in sthenic pneumonia; and lastly, a lessening of the reds with a leucocytosis of high degree, as in the leukemias. The latter are divided into two varieties, the spleno-myeloginous and the lymphatic. Pure splenic and myeloginous types do not exist. Both forms of leukemia have an anemia of about equal grade (3,000,000), and a large permanent leucocytosis. In the spleno-myeloginous, a ratio of one white to ten reds is common, and the ratio may be one to two; in the lymphatic variety the ratio is about one to forty, rarely exceeding one to ten. A leucocytosis rarely exceeds 1,000,000, or a ratio of one to fifty. The greater the leucocytosis, the greater is the anemia. Another point in distinguishing the two varieties of leukemia is a marked change in the ratio of the different forms of the white corpuscles one to another. In the lymphatic variety the leucocytes are nearly all young forms, called lymphocytes, while in the spleno-myeloginous, though all forms are absolutely increased, relatively they are all diminished (except the eosinophiles), and 35 to 40 per cent. of the leucocytes is taken by a cell found, normally, only in the marrow of bone. This myelocyte is a white cell of large size, distinguished only from the large lymphocyte in possessing granules, and from the neutrophiles by the shape of its nucleus.

Hodgkin's disease has always been a stumbling block in the study of the blood. It resembles some cases of leukemia and the blood examination is always a surprise. There is no anemia, the size of the reds is normal, none are found nucleated, the leucocytes rarely exceed 7500, and the ratio between the different varieties of whites is normal. The differentiation of amyloid disease, chronic malaria and chronic interstitial nephritis, from pernicious anemia is more difficult. This always requires a considerable search of stained specimens before a satisfactory conclusion can be reached. Special stress is put upon this method of examination, for the more one studies stained specimens the more reliance will be put upon their findings, especially when the Ehrlich stains are employed.

THE WEEK IN CONGRESS.

The return of Mr. GALLINGER from the Isle of Cuba has apparently given new life to the CAFFERY bill in the Senate, and also to the Antivivisection bill.

Mr. CAFFERY addressed the Senate in favor of his bill on March 22, and again on March 23, and accord-

ing to the *Record* spoke over two hours on the first occasion, and nearly two hours on the second occasion. No other speeches have been made on the subject, and his own speech has not been printed, as he has not yet concluded.

Senator SPOONER has further amended his bill, and will press the amendment when it comes up. The great and overwhelming interests of our country in the Spanish imbroglio and fiendish assassination of our sailors in Havana harbor have prevented consideration of the sanitary matters to the extent that otherwise would have been given them.

Our friends should continue their efforts against the CAFFERY bill, as although last week it was supposed to be "snowed under."

The Medical Department of the Navy have succeeded in having the age limit bill (Senate 2872) passed. This bill provides that the revised statutes which now fix the age limit of persons to be appointed Assistant Surgeons at 26 years, at 30 years, so that hereafter the section will read: "No person shall be appointed Assistant Surgeon until he has been examined and approved by a Board of Naval Surgeons designated by the Secretary of the Navy, nor who is under 21 or over 30 years of age." The twenty vacancies in the Medical Corps of the Navy will be speedily filled when the House passes this bill. The age limit of the services, as it now stands is, Navy 26 years, Army 28 years, and under the regulations of the Marine-Hospital Service, approved some years ago, the age limit in that civil service was fixed at 30 years. The wisdom of this was evident by the fact that there is never any trouble in filling existing vacancies, whereas in the Navy Department they have always had difficulty in securing persons under 26 years of age who could pass the required examination. It is to be hoped that the House will take this bill from the speaker's table and pass it without delay, as owing to the rapid increase of the new Navy it is necessary to have these vacancies filled as soon as possible.

CORRESPONDENCE.

An Open Letter.

Read before the Boston Medical Society, March 15, 1898, by R. K. Noyes, M.D., and unanimously approved and adopted by the Society, and recommended for publication.

To the Trustees, the Superintendents, the Staffs, and the Medical Officers of the Hospitals and Dispensaries of Boston.

Dear sirs and gentlemen:—The members of the Boston Medical Society feel constrained to present for your respectful consideration certain facts and conditions, which seem to have an intimate relation to the construction and to the solution of the problem which is known as the "abuse of medical charity."

It is hardly necessary to say that the problem in question, which, at the present time, so frequently comes to the attention of the medical profession in all large centers of population, has, on the one hand, features which are perplexing as well as delicate, and, on the other hand, features which are nevertheless exasperating and disheartening.

We deem it proper to state, not without due regard to the fitness of things, that we have hoped for a long time, that the initiative in the matter of dispensary-abuse reform, would be taken, and that an adequate remedy for the evil would be discovered and applied, by some action on the part of the Massachusetts Medical Society. And we beg to believe that it will be readily agreed by all fair-minded medical men, that we had, in that able, honored and influential body, the most ample and justifiable grounds for so hoping, as well as supposing and expecting, inasmuch as it is from within that Society that our vaunted medical ethics, which determine, not only our relations to our professional brethren, but also our relations to the public in general, are supposed to originate.

Moreover, it is from the members of that Society that our medical colleges frequently obtain their tutors, instructors and professors, and that our hospitals choose their medical and surgical staffs; and it is toward those members of the profession that there is always the strongest tendency on the part of practitioners to hold sentiments of special honor, and to feel inclinations for emulation.

It is with pleasure that we acknowledge the almost uniform courtesy, generosity, sympathy and fairness, which eminent professors, both as private practitioners and as consultants, have accorded to us.

As against the professional ethics of the consulting practitioners of Boston, or of the staffs and medical officers of the hospitals and dispensaries, in our professional relations with them, especially in emergent and capital cases, we have no inclinations to complain and no reasons to protest.

But, as private practitioners, we have had, with no slight feelings of regret, occasion to experience what seems to us an entirely different condition of things, as manifested in the methods which are employed by some of the medical men, who are connected with the medical and surgical out-patient departments, in the several large dispensaries, in their relations to us as professional brethren, and in their relations to certain dispensary patients, especially to those patients who were ours perhaps a day, or an hour, or a year, previously, and who would otherwise be ours continuously, when occasions require, if only the same principles of medical ethics were carried out by these gentlemen in public practice as they would undoubtedly carry out in their relations to us in private practice.

As to medical consultations in general, aside from the special welfare of the patients, two things are always of particular importance, as between the practitioner and the consultant, namely: first, that the former shall remain in full charge of the patient, and second, that he shall have his standing with his patient enhanced and fortified. Therefore, that this is not done in our large dispensaries, is precisely what we allege against certain medical men and medical officials, who practically have charge of the conduct of all the principal dispensaries in Boston.

However unwittingly dispensary physicians and surgeons may be responsible for it our complaint is that, by giving advice and treatment to patients at the dispensaries, many of whom must be assumed to be able to pay for it, without a note of request or of recommendation from their family physicians, except in emergent cases, and by omitting to uphold the ability, the proficiency and the procedure of these family physicians with reference to all cases, so far as may be consistent with fact and with conscience, which as to most all dispensary patients can be truthfully done, we not only lose through them our patients but also we lose our standing with our former patients, and hence our standing with prospective ones and with the public.

Even if that result arises, as possibly may be the case, from a purely negative attitude toward the patients and the public

and toward the profession, it hardly needs to be pointed out as to what the consequences would be if that same negative attitude were to be assumed by them in the ethics which would govern them as honorable private practitioners, or especially in their capacities as private consultants with any physician among us, were the opportunity offered to them to do so.

Ethically, as well as justly, it certainly can not be held by any physicians, nor should the public be led to believe by any words or acts on the part of medical officials or dispensary practitioners that private practitioners in general, who are instructed by these same professors, who are graduated from the same colleges, who possess the works of the same authorities, who employ the same therapeutics, who proceed upon the same theories, who have as good a practical experience, who realize as great a sense of responsibility, and who evidently are inspired by as high an ethical sense, are less competent professionally or less successful with given cases than many of those physicians and surgeons who are officially connected with the dispensaries and with the out-patient departments of the hospitals.

In the position from which we take our observations, it may never have come to the attentions of the gentlemen to whom we in this letter especially address ourselves, that, according to the unchanged intentions of those institutions in question so far as can be shown by the statutes and by the original parchments, their is no provision for any such perversion of the conduct of the dispensaries of Boston as seems to be clearly demonstrated by the manifest tendency of some of the dispensary physicians to utilize in their official capacities the dispensaries and the out-patient departments of the hospitals, for something other than the disinterested welfare of the sick poor, and of the official management of the dispensaries to protect and to promote the existence of these institutions by any such means as the dispensing of drugs and of medicines for remuneration.

In conclusion, it is only desirable to add as to the work of medical charity that, as citizens and as physicians, we desire to declare and to emphasize our earnest advocacy of free dispensaries for all those persons as designated in the hospital and dispensary charters who are sick, poor and unable to be properly treated and cared for at their homes and to pay a physician, and that such persons should not be deprived of the blessings and the benefits of such dispensaries by the unjust encroachments of the well-to-do, the well dressed, the selfish and the fraudulent, and that as private practitioners who constitute the great body of the medical profession, and who traditionally are known to be self-sacrificing and to be ever generous toward the needy and the humble, we shall, so far as may be consistent with our time and strength whenever proper occasions arise, endeavor to give cheerfully our professional services without remuneration to all those whom we may personally know to be in need and to be deserving thereof. Signed for the Society,

M. GERSTEIN, M.D., Secretary.

The Free Medical and Surgical Treatment of the Well-to-do in Michigan University.

CHICAGO, March 24, 1898.

To the Editor:—I am very glad to see Dr. Vaughan's statement of the policy of the Board of Regents of Michigan University with regard to the admission of patients able to pay for treatment to the free clinics of their medical department. It would be well for the credit of the University of Michigan, whose faculty and teachings we all respect and admire, that this statement should be given the widest publicity not only among the profession at large, but also among the members of their teaching corps: because the ideas entertained by the writer of the editorial corrected by Dr. Vaughan, are very widely entertained. Last summer, your correspondent was discussing with one of the clinical instructors of the University, the clinical advantages to be found in Ann Arbor (we were *not* discussing the abuse of medical charity), and he spoke of the very large number of patients there from all parts of the State and mentioned incidentally, that many of them had no business in a free clinic; but said that they were not allowed to refuse treatment to any citizen of Michigan however wealthy. He said he sometimes puts off operating on well-to-do patients on one excuse and another, till they get tired and go elsewhere, but that he is never permitted to refuse them outright. This particular member of the faculty and doubtless others, will be glad to be corrected. Very respectfully,

HORACE M. STARKEY, M.D.

Treatment of Pulmonary Tuberculosis.

SANTA CLARA, CAL., March 22, 1898.

To the Editor:—I am well pleased with the results of my letter on "Oxytuberculin," published in The JOURNAL, Feb. 19, 1898, p. 446. It is bringing out much more in the way of facts than I could have hoped for.

I am obliged to Dr. Beattie for the information that seven physicians out of 120 *regular* physicians in the county have used "oxytuberculin." I presume that the "(or more)" which follows the "seven," may be assigned to the forces of the *irregulars* until the "(or more)" materialize. I think that it argues remarkably well for the intelligence of the profession of this county that only seven physicians have been credulous enough regarding "oxytuberculin" to use it, especially when living within but a few miles of the place of its production.

In regard to the case of asthma alluded to in my letter, I will state for Dr. Beattie's benefit that I am in possession of more facts than he gives me credit for. However, it is not the purpose or scope of this paper to state how I know these same facts.

In the San Francisco daily *Examiner*, Monday morning Oct. 25, 1897, p. 2, appeared the following paragraph: "Dr. D. A. Beattie of Santa Clara, has used Dr. Hirschfelder's cure, and this month he reported its effect on a patient. He said that at the beginning of the treatment the patient was not expected to live a week, but now appears perfectly well." Evidently "cured" does not mean the same as "perfectly well" in Dr. D. A. Beattie's way of thinking, or there is a mistake somewhere.

There is no doubt about the patient referred to by me having asthma. The patient still has asthma. The fact that the patient may have caught cold and had sub-acute bronchitis will account for the symptoms observed in the case, but does not constitute positive evidence of tuberculosis. The fact that the patient is much better now and remaining so through the winter and spring months is evidence that the patient in all probability has no tuberculosis. Dr. Beattie has confirmed my knowledge of the case by acknowledging that the patient has asthma. "The case was far gone," Dr. Beattie says. Dr. Hirschfelder does not recommend his oxytuberculin as a cure for advanced cases. I think I am fully justified in doubting the diagnosis of tuberculosis in this case. I am also inclined to the belief that the Doctor has not kept a close count on the number of paroxysms of asthma recurring in this patient during the past fifteen months. I am credibly informed that there have been many more paroxysms of asthma in that time.

I will agree with Dr. Beattie that in some of his cases there was marked evidence of tuberculosis. I am not aware of any of them having been materially benefited by oxytuberculin. Some of these cases have terminated fatally.

I will agree with him that "facts are better than statements." That is just what I hope to make clear before I am done with this subject.

I am glad that Dr. Beattie acknowledges that he can not guarantee a cure of tuberculosis in any case. We had surmised that the Doctor felt equal to the task of curing many if not most cases of tuberculosis he might encounter.

I must thank Dr. Beattie for the statement that "his own experience" will not lead him to "say that oxytuberculin will cure a single case of tuberculosis." He coincides with the majority of the medical profession in that regard. There is never a contra-indication toward applying any remedy which will relieve distressing symptoms. I fail to understand what he calls a "specific treatment." I think no remedy can properly be classed as a specific until it will positively and permanently cure a fair per cent. of a particular sort of cases.

Yours respectfully, E. H. SMITH, M.D.

Grand River Valley Medical Association.

HOLLAND, MICH., March 28, 1898.

To the Editor:—On page 739 of the JOURNAL, March 26, 1898, under the head of "Post-Graduate Lectures at Home," it is claimed Eastern medical societies have adopted a new plan by which they increase their membership and interest in the meetings. The Grand River Valley Medical Society of Michigan adopted this plan in 1894 when at their annual meeting Prof. J. H. Etheridge was invited to be with us and read a very instructive paper; since which time we have had such men as Professors Dock and McClintock of Ann Arbor, Professors Graves, Green, Boise and Griswold of Grand Rapids. We find our meetings are made very instructive by this plan and will continue it as long as we can procure volunteers for their expenses and entertainment. Will some Chicago men volunteer for our May and August meetings, which occur on the second Tuesdays of those months?

B. B. GODFREY, M.D., Sec.

Why Not the House Cat?

LANSDOWNE, PA., March 2, 1898.

To the Editor:—I have been interested in the letters regarding the castration of squirrels, in the March 5 issue of your excellent JOURNAL, and it occurs to me to suggest that some learned member of the profession set himself to the bringing out of some scheme whereby the squirrels might be led to teach their progeny-limiting process to the common house cat! In the interest of peace and quietness and sweet refreshing sleep, such an happy "artificial cut-off" as Saxe says, is needed. Fame and fortune await him who will bring to pass this step toward Heaven. Sincerely, J. M. LAURISON, M.D.

ASSOCIATION NEWS.

Section on State Medicine.—The following additional papers (*vide* JOURNAL, March 26, p. 743), for this Section:

The Importance of the Immediate Sterilizing of Foods and Drinks before their Ingestion, by Augustus P. Clarke, Cambridge, Mass.; Henry D. Holton, Brattleboro, Vt., will open discussion.

Relation of the Courts of Lunacy Law or Insanity Before the Law, by Charles H. Hughes, St. Louis, Mo.; discussed by William P. Munn, Denver, and T. D. Crothers, Hartford, Conn.

The Milk Supplies of Cities, is the Public Entitled to Receive Better Service? by Henry O. Marcy, Boston, Mass.; discussed by Henry L. Coit, Newark, N. J.

Some of the Duties of Health Boards, by Henry D. Holton, Brattleboro, Vt.; discussed by Charles H. Shepard, Brooklyn.

Alcoholic Stimulation or Irrigation, Which? Including their Uses and the most Efficient means to Obtain their Effects, by W. Van R. Blighton, Buffalo, N. Y.; discussion opened by J. H. Kellogg, Battle Creek, Mich.; Charles H. Hughes, St. Louis; T. D. Crothers, Hartford, Conn.; Augustus P. Clarke, Cambridge, Mass.

The following have promised papers but subjects have not yet been received: Benjamin Lee, Philadelphia; H. N. Avery, Minneapolis, Minn.; Lewis D. Mason, Brooklyn; Thos. F. Harrington, Lowell, Mass.; Elmer Lee, New York City.

Section on Cutaneous Medicine and Surgery.—The Section on Cutaneous Medicine and Surgery (and this includes syphilology) promises to be a useful and interesting meeting. The chairman of the Section, Dr. A. W. Brayton of Indianapolis, has received the following titles of papers.

Treatment of Pigmentary Diseases of the Skin, by Dr. John V. Shoemaker, Philadelphia, the Chairman of the Section on Materia Medica and Therapeutics. Dr. Shoemaker will also hold a clinic on some cases of cutaneous diseases which will be collected by Dr. J. M. Blaine of Denver, the local Chairman of the Section.

The Causes of Sycosis, by Alfred E. Regensburger, San Francisco; Two Cases of Marked Iodin Intoxication with Treatment, by A. H. Ohmann-Dumesnil, St. Louis.

Dr. Wm. S. Gottheil, New York, will read two papers illustrated by casts and photographs.

The Causes of Baldness, by J. M. Blaine, Denver.
Leukemia Cutis, by Wm. Gilbert Hay, San Francisco.
Tuberculosis of the Skin, by A. W. Brayton, Indianapolis.
Syphilis and its Relation to Consumption, by Lincoln Mussey, Denver.

Dr. Wm. H. Davis of Denver, has promised a paper, and papers are expected from Drs. Wm. T. Corlett, Cleveland; T. C. Gilchrist, Johns Hopkins, Baltimore, and Robert Hessler of the Central Hospital for Insane Indianapolis, on "The Effect of Thyroid Medication on the Diseases of the Skin," and a paper from Dr. L. D. Bulkley, New York.

Dr. Wm. T. Corlett writes the Chairman of the Section that he has visited Hot Springs and there will be several attendants on the Section with papers from that locality.

The Section will hold its session in the parlor of Unity Church in the same building with the Section on Materia Medica, and but one short block from the headquarters of the ASSOCIATION, the Brown Hotel.

All additional titles of papers should be sent at once to the Chairman of the Section or to the Secretary, Dr. T. C. Gilchrist, Baltimore, in order that they may appear on the permanent and preliminary programs and announcements.

SOCIETY NEWS.

Florida Association of Railway Surgeons.—The annual meeting of the Florida State Association of Railway Surgeons will be held at Jacksonville, Fla., Monday, April 25, 1898, at 10:30 o'clock, A.M. J. Harrison Hodges, M.D., Gainsville, Fla., President.

South Carolina Medical Association.—The forty-seventh annual meeting of the South Carolina Medical Association will be held at Harris Lithia Springs, April 13 and 14, 1898. Titles of papers should be sent to the Secretary, who also desires members expecting to attend the Denver meeting of the AMERICAN MEDICAL ASSOCIATION to advise him. E. F. Parker, M.D., Corresponding Secretary, Charleston, S. C.

Ohio State Medical Society.—At the next annual meeting of the Ohio State Medical Society, Dr. Senn will deliver the address in surgery; Dr. Hare has promised to deliver the address in medicine and a number of the ablest practitioners in Ohio have prepared papers. Matters of interest to the whole profession in the way of medical legislation, will be presented by the State Board of Registration. The headquarters for the Society will be at the Great Southern Hotel in Columbus. The date of the meeting is May 4, 5 and 6, 1898.

Kansas Medical Society.—The thirty-second annual meeting of the Kansas Medical Society will be held in Topeka, Kansas, May 4, 5 and 6, 1898. According to resolutions adopted last year, committees from the three State societies, Regulars,

Eclectics and Homeopaths met at Topeka, Sept. 28, 1897, and agreed as follows: "That each society would call its annual meeting at Topeka on the first Wednesday, Thursday and Friday of May, 1898. That the societies hold their meetings in separate halls, but that on Wednesday evening the three societies meet together. It is hoped that by this combined meeting matters pertaining to medical legislation and kindred subjects in which all are equally interested may be furthered. Those having a paper or important case to present or desiring any information, write W. F. Sawhill, Concordia, Kan., Corresponding Secretary.

Indiana State Medical Society.—The annual meeting of the Indiana State Medical Society for 1898 will be held in LaFayette, May 5 and 6. The wives of physicians who attend will be entertained by a committee of ladies. The meetings of the society will be held in the chapel of Purdue University, except the evening session, which will be held in Trinity Methodist Episcopal church. The Tippecanoe County Medical Society will tender a reception immediately after the evening session at the LaFayette Club, to the visitors and citizens of LaFayette. Free street car transportation will be provided members to and from Purdue University. The Central Passenger Association has granted the usual one and one-third fare for the round trip on the certificate plan, provided one hundred members avail themselves of the rates. Members intending to read papers (No titles will be received after April 15, 1898) will please send titles as soon as possible, endorsed by the secretary of their society. The hotel accommodations are ample. The laboratories of Purdue University will give continuous demonstrations of subjects in which every physician is interested. Geo. F. Keiper, M.D., LaFayette, Ind., is Chairman of the Program Committee.

Association of American Physicians.—Preliminary program of the thirteenth annual meeting of the Association of American Physicians, to be held in the Arlington Hotel, Washington, D. C., May 3, 4 and 5, 1898:

President's Address, F. C. Shattuck, Boston.

Discussion, Is a Uric Acid Diathesis an Important Factor in Pathology? Referee representing physiologic chemistry, V. C. Vaughan, Ann Arbor; referee representing clinical medicine, Wm. H. Draper, New York; co-referee representing clinical medicine, James Tyson, Philadelphia.

Bacillus Icteroides (Sanarelli) and Bacillus X (Sternberg), Geo. M. Sternberg, Washington.

Comparative Studies of Bovine Tubercle Bacilli and of Human (sputum), Theobald Smith, Boston.

Actinomycotic Forms of the Bacillus Tuberculosis; an Experimental Study, Simon Flexner, Baltimore.

Gastric Syphilis with the Report of a Case of Perforating Syphilitic Ulcer of the Stomach, Simon Flexner, Baltimore.

Some Observations on Cardiac Syphilis, I. Adler, New York.

Danger of Error in Diagnosis between Chronic Syphilitic Fever and Tuberculosis, E. G. Janeway, New York.

Two Attacks of Temporary Hemiplegia occurring in the Same Individual as the Result of the use of Peroxid of Hydrogen in a Sacculated Empyema (Pleural), E. G. Janeway, New York.

Acute Interstitial Nephritis, Wm. T. Councilman, Boston.

Chronic Interstitial Nephritis (by title), I. N. Danforth, Chicago.

Acute Leucemia, M. H. Fussell and A. E. Taylor, Philadelphia.

Bacteriology of Cheese, V. C. Vaughan and Julian T. McClymonds, Ann Arbor.

A Chapter in Peripheral Pathology; the circulation in the feet, Morris Longstretch, Philadelphia.

A Case of Chronic Infective Endocarditis with Streptococci Found in the Blood before Death Treated by Antistreptococcus Serum and Experimental Researches upon the Effects of Injections of Antitoxins upon the Kidneys, W. H. Thomson, New York.

Nephritis of Malarial Origin, W. S. Thayer, Baltimore.

Experiments upon the Localization of Micro-organisms in the Spleen and the Importance of a Lesion of an Organ for the Localization of Bacteria within it, S. J. Meltzer and T. M. Cheesman, New York.

Congenital Stenosis of Pylorus in Infants, S. J. Meltzer, New York.

Paralysis of the Left Recurrent Laryngeal Nerve in Mitral Stenosis, Wm. Osler, Baltimore.

Combined Symptoms of Myxedema and Exophthalmic Goiter, Wm. Osler, Baltimore.

The Renal Form of Enteric Fever, J. C. Wilson, Philadelphia.

Gastric Carcinoma associated with Hyperchlorhydria, D. D. Stewart, Philadelphia.

The Diffuse Infiltrating Form of Secondary Melanosarcoma of the Liver (by title), L. Hektoen, Chicago.

A Case of Myxedema and Albumosuria; Treatment with Thyroid Extract; Death, R. H. Fitz, Boston.

Some Usually Overlooked Physical Signs in Chest Diseases, Norman Bridge, Los Angeles.

Studies of Antitoxins for Tuberculosis, E. L. Trudeau and E. R. Baldwin, Saranac Lake.

Report of a Case of Madura Foot, J. H. Wright, Boston.

Antitoxin Treatment of Pneumonia, A. H. Smith, New York.

PUBLIC HEALTH.

The Teeth and the Soil.—Examinations of recruits in Bavaria and Sweden conducted on a large scale have confirmed the assumption that the richer the soil in lime and magnesia, the harder the drinking water, the more perfect the development of the teeth.—*Münch. Med. Woch.*, No. 3, 1898.

Health in Chicago.—The report for February gives 2023 deaths during the month, a rate of 1.26 per 1000. The rate for the corresponding month in 1897 was 1.09. Of these 2023 deaths, 525 were of persons under 1 year old and 231 between 1 and 5 years. The chief causes were: Pneumonia 296, nervous diseases 243, consumption 215, bronchitis 139, heart disease 126, acute intestinal diseases 106, cancer 75, diphtheria and membranous croup 64.

Detention of an Infected Ship at Quarantine.—Health Officer, Dr. Doty, New York harbor, has detained the steamship *Strabo* from Rio Janeiro because of the death of the cook by yellow fever during the voyage northward. The captain of the vessel was ill with that disease on the trip, but he recovered and was able to resume the command of the vessel. The *Strabo* stopped at Santa Lucia and was there disinfected. She was again disinfected under the direction of Dr. Doty and then allowed to proceed.

Progress in the Production of the Diphtheria Toxin.—L. Martin reports that he has succeeded in obtaining a toxin that kills at 1 to 500, and describes the special medium best adapted for the purpose, a permanently alkalin bouillon. But besides the importance of a well adapted medium, there is also the necessity of a particularly toxigenic race of microbes. He asserts that the toxigenic function and the virulence of a microbe are quite distinct properties. This fact explains the sudden fatal syncope in certain cases of apparently mild diphtheria, as even slightly virulent microbes may be capable of secreting powerful toxins. He therefore adds that in any case in which the exudate produces cultures in twenty-four hours, resembling the diphtheria microbe in appearance and reaction to stains, the patient should be considered affected with diphtheria.—*Annales de l'Institut Pasteur*, January 25.

Prophylaxis of Diphtheria in Hospitals.—For two years Heubner has made a practice of having all the children in his pediatric clinic injected with 0.8 c.c. Behring serum, 200 units, every three weeks as a preventive against diphtheria contagion. During this period there has not been a single case of contagion except once, when to test the necessity of the measure, the injections were suspended for a while and four children were found to have contracted the disease imported by a visitor. The preventive injections were resumed and there has been no case since among the five hundred children that have been in

the hospital. The children bear these small but effective doses without disturbance of any kind, in spite of their feeble condition.—*Deu. Med. Woch.*, February 10.

Concentrated Diphtheria Antitoxin.—Bujwid announces that he has succeeded in producing an antitoxin of which 1.5 to 3 c.c. contains 1000 units. He accomplishes this by slowly freezing and then slowly thawing the antitoxin, which separates into a yellow lower and upper colorless layer. The lower layer contains almost all the immunizing properties, which are thus concentrated in it.—*Deu. Med. Woch.*, February 24, from *Przeglad Lekarski*, No. 19.

For the Prevention of Premature Burials.—In the New York legislature a bill is pending whose intent is to establish mortuaries, in all large cities, for the detention of all human bodies for a period of seventy-two hours after the supposed dying. This does not apply to cases where the cause of death is an infectious disease. In cities of the smaller size, namely those whose population is less than ten thousand, it is provided that no mortuaries shall be necessary unless the cemeteries thereat have more than one hundred burials each per annum.

Dispensary Statistics for New York.—The State Board of Charities of New York State will report to the legislature some rather startling statistics bearing on the dispensary abuses complained of by members of the medical societies, which have resulted in the introduction in the legislature of a bill to provide for the regulation of dispensaries in cities. Reports received by the board from sixty-six or more dispensaries in the borough of Manhattan for the past year indicate that not less than one-half of the people of New York city are receiving practically free medical attention. The following are the statistics for the seven largest cities in the State:

	Number of patients.	Per cent. of population.	Number of prescriptions.
New York . . .	1,077,140	71.0	1,699,468
Brooklyn. . . .	252,695	31.3	455,940
Buffalo	14,886	5.8	32,509
Rochester . . .	2,476	1.8	6,698
Albany	20,345	21.4	17,939
Syracuse. . . .	8,796	9.9	6,116
Troy.	715	1.2	716

Besides the medical relief furnished by dispensaries, various charitable and religious societies in the city of New York provide medical attendance for the poor at their homes, and it is a well known fact that a certain proportion of all city practitioners give gratuitous treatment to many patients without charge. It is said to be a not uncommon occurrence in New York to find families whose income ranged from $20 to $40 per week going to the dispensary for treatment, and in one instance a business man and real estate owner worth over $100,000, was one of the free patients.

A Radical Improvement in Water Filtration.—The fact is demonstrated that aluminum is as excellent a purifier of water as there is. The salts of this metal are insoluble in water, and, consequently, it is plain that when these salts are formed the water can be strained and the impurities removed therefrom. Perhaps the most practicable method of purifying water by this means is the trough method, as it is called, the trough being composed of plates of aluminum and zinc or iron, six or eight inches apart. One end of the tank affords an entrance for the volume of water which passes over the top of one plate and thence under the plate next to it, this being accomplished by the fact that the elevation of the several plates is different. In connection with this tank or trough, there is an electric generator of moderate size, and, though aluminum will not form the negative pole of a current, the other plates used will. Now, as it is always the case that when an electric current comes in contact with water in this manner it decomposes a certain portion of the fluid, as it were, the result of such decomposition is that ozone is formed and oxygen freed, the meaning of this being the absolute extinction of life in any microbes or organic matter which the water might contain, leaving it, after meeting the purification the salts of aluminum occasion, as clear and healthful as the water which flows from the purest spring.

The New York City Board of Health.—In no small measure is the administration of this Board a factor to the whole country, for that city is the gateway to commerce and immigration; it is the largest distributing point for manufactured supplies to the whole country. The appointment of Mr. Nathan Straus as President of the Health Board under the new administration gave a hope to the citizens that this important branch of the municipal government would be administered in the interests and for the protection of the people; for as has been well pointed out, he had as a private citizen done more than any other one man in the entire city to mitigate the evils generated by impure milk. He had studied certain phases of the problems of public health, and was equipped for the duties of the position as few men could be. Since he took office the Health Board has been made such a target for criticism from the Mayor's office that early in March he resigned as President of the Health Board, and within an hour the Mayor appointed Michael C. Murphy, previously a clerk in the first district court. The new appointee has been a Tammany leader of late years. Tammany discovered his versatility. He has represented his district in the Assembly and the Senate; he has been excise commissioner, and is now President of the Health Board. This appointment is generally regarded as unfortunate from a sanitary standpoint, and calls to mind a recent expression by the editor of *Public Health*, when speaking on the water scandals of Philadelphia, this event "*shows the utter helplessness of the people in the presence of political adventurers.*" The present administration is carrying its economies to the danger point in this department, especially in that line of retrenchment that has abolished its mercantile inspection service. It may be added that Mr. Straus was desirous of devoting his salary as president, and as much more as shall be needed, to erect a milk-sterilizing plant for the infants at the Randall's Island asylum, where the death rate has always been very high. An important legislative measure, affecting the future death rate of New York City, is the proposed establishment of a State sanitarium in the Adirondack Mountains for the treatment of pulmonary tuberculosis. The death rate from this scourge is very high throughout the entire country. In the State of New York alone, statistics show that thirteen thousand deaths occur annually as the result of this disease. The city of New York appropriated the sum of $60,000, for the Board of Health of the city, to be used in removing deserving persons suffering from tuberculosis from tenement houses and sending them to special institutions. A home for consumptives exists in Brooklyn; one has been recently established within the upper wards of New York. These are steps in the right direction, but science has proved that climatic conditions form as large a factor in the development of this disease as in its cure. New York State is fortunate in having within its bounds a region offering the right climatic conditions for the retarding and often for the cure of this disease. The suffering in the city, especially in the tenement house districts, is extreme, and to the ignorance of their denizens is largely due the spread of this disease. Nothing but the removal of a patient from a home will protect the inmates of that home from the danger of contagion. Public sentiment in this State must be aroused to the point of demanding that right provision shall be made for the care and possible cure of those suffering from consumption. Private enterprise has done much, but it can not do what the State can and should do. New York is fortunate in having had an experiment station under the best scientific control, which offers a precedent and is a proof of what may be done. Dr. Trudeau, who helped to establish and who now controls the sanitarium at Saranac, N. Y., has demonstrated the possibilities of caring for many of those persons who suffer and die because the State has not awakened to its duties in that direction.

BOOK NOTICES.

Record of the Class of '98, Keokuk Medical College. Cloth. Illustrated. Keokuk, Iowa, 1898.

This college annual contains illustrations of the college buildings, clinics, several classes and members of the faculty, with other matter usually found in college annuals. The volume is a credit to its publishers, the class of '98.

The Retrospect of Medicine. Edited by James Braithwaite, M.D., London, and E. F. Trevelyan, M.D. London, B.Sc., M.R.C.P. Vol. 116. July-December, 1897. London: Simpkin, Marshall, Hamilton, Kent & Co. Ltd., 1898.

This half-yearly journal contains "a retrospective view of every discovery and practical improvement in the medical sciences." The first 128 pages are devoted to abstracts of the "most practical articles in the volume." The remainder presents citations from diverse journals concerning practical medicine, surgery and obstetrics and gynecology, comprising 110 citations.

Transactions of the Ohio State Medical Society. Edited by R. Harvey Reed, M.D., Columbus, Ohio. Cloth. Pp. 488. 1897.

This volume contains the proceedings of the fifty-second annual meeting, held at Cleveland, Ohio, May 19, 20 and 21, 1897. There are five addresses, nine papers on surgical subjects, six on medical, five on mental and nervous diseases, with a number on gynecology and obstetrics, ophthalmology, rhinology and laryngology, dermatology, and forensic medicine. The minutes, constitution and by-laws, obituaries and reports comprise the remainder of the volume. A number of inserted tables add to the value of the papers. The book is on good paper, well edited, and a decided credit to the society.

Transactions of the Royal Academy of Medicine in Ireland. Vol. xiv. Edited by William Thomson, M.A., F.R.C.S., General Secretary, Surgeon to the Richmond Hospital, Dublin. Cloth. Pp. 420. Illustrated. Dublin: Fannin & Co., Ltd., Grafton St. London: Bailliere, Tindall & Cox. 1896.

Besides the lists of officers, fellows, members, student associates, and the rules, annual report and treasurer's report, this volume contains fifty papers read before the sections of medicine, surgery, obstetrics, pathology, state medicine, and anatomy and physiology. The illustrations and tables are gotten up in good style, the full page plates being especially noticeable additions.

Report of the Health Officer of the District of Columbia. 1897. Cloth. Pp. 339. Maps. Washington: Government Printing Office. 1897.

This volume contains the usual data found in reports of this nature and includes much valuable reference matter for the physician or student carrying out the investigations on sanitary and vital statistic lines. The book is well indexed and also contains an index to the laws and regulations relating to the public health. The maps are specially valuable additions to the book.

NECROLOGY.

William E. Clark, M.D., River Forest, Ill., died March 22, the result of a surgical operation. Dr. Clark was born at Lebanon, Conn., Feb. 22, 1819, of illustrious Puritan stock, was a graduate of Vermont Medical College, and practiced medicine at Rochester, N. Y., and Coldwater, Mich., before settling in Chicago in 1852. He entered the army in 1861 as surgeon of the Fourth Michigan Infantry, and in 1863 was given charge of the Washington Hospital, where he remained until the close of the war. He returned to Chicago in 1866 and practiced here until his illness of two weeks ago. Dr. Clark was a brother of Grace Greenwood, the Washington authoress, and of Major Charles E. Clark, a prominent retired army officer of Washington.

Elizabeth S. Dalby-Norred, M.D., born in Wells County, Ind., Oct. 14, 1843, died at her home in Minneapolis, Minn., March 21. She was married to Dr. Charles H. Norred in 1865 and in 1881 was graduated from the Woman's Medical College of Chicago. Her connection with various hospitals and activity in church work, added to her membership in the American Medical Association and several other medical organizations, contributed much to her reputation. The interment was at Elkhart, Ill.

Lewis Reed, M.D., born in Bridgeton, N. J., in 1806, died at Ocean Grove, N. J., March 22. After practicing in Millville, N. J., where he remained until 1856, he became the first mayor of Atlantic City, holding the office for four terms. He was afterward appointed postmaster of that city by President Lincoln and served through two administrations with signal ability. Seven children are his survivors, five of whom are sons, Dr. Thomas K. Reed of Atlantic City being one.

John Dwyer, M.D., New York University Medical College, 1871, of Hartford, Conn., died from rheumatism, March 20. He was unmarried, a native of Ireland, and, as far as known, without near relatives in this country. As a man and a physician he was highly esteemed.

Henry Bedell Crane, M.D., University of Pennsylvania, 1883, died at his home in Newark, N. Y., March 23, aged 42 years. A widow and four children survive him.

John B. Brooks, M.D., Reading, Pa., March 19, aged 65 years.——Joseph D. Couch, M.D., Cambridge, Mass., March 16.——C. L. Cudlipp, M.D., Richmond, Va., March 14, aged 33 years.——E. Dawley, M.D., Anamosa, Iowa, March 20, aged 50 years.——Joel Heldmann, M.D., Baltimore, March 23, aged 78 years.——S. G. Pickett, M.D., Elgin, Ill., March 21.——William H. Smith, M.D., Intercourse, Pa., March 16, aged 41 years.——John Mason Strong, M.D., Charlotte, N. C., March 16.——Assistant Surgeon George Clinton Hubbard, U. S. N., died in Washington, D. C., March 20; burial in Norwich, N. Y.

Deaths Abroad.—Dr. Mariano de la Paz Graells, one of the oldest professors in Spain and a distinguished naturalist, aged 90 years.——Dr. Oscar Hasse of Nordhausen, aged 61 years.——Dr. Didier, lecturer on physiology in the Catholic medical faculty of Lille, and vice-president of the Anatomo-Clinical Society of that town.

MISCELLANY.

University of Pennsylvania.—Certain graduates of the University of Pennsylvania of the class of 1848-49 have asked the editor to find out how many of the old class are still alive and their present address, as it is desired to have a reunion, if possible, in 1899. Any address sent to the editor of the Journal will be duly forwarded. Medical exchanges please copy.

Diphtheria from Laboratory Infection.—Riesman (*Phil. Med. Jour.*, March 5) reports a case of laboratory infection, of value in determining the period of incubation of this disease, about which there still exists much obscurity and which in this case was less than forty-eight hours, probably between forty and forty-three hours. In this infection the bacteria were of the highest degree of virulence possible and were deposited in large numbers directly on the surface that became the seat of the disease.

A New Pathogenic Chromogenic Bacillus.—Gorham (*Journal of the Boston Soc. of Med. Sci.*, March) describes a new bacillus resembling the bacillus pyocyaneus. It differs from it, however, in the following points: 1. It is provided with several flagella scattered over its whole length, while the bacillus pyocyaneus has but one or rarely two at one or both poles. 2. It has never been seen to grow out into chains or filaments of more than two elements, no matter in what culture medium it is grown. 3. The culture-media never show fluorescence

as do those on which the bacillus pyocyaneus is grown. The color is always green, with no trace of yellow, and only one pigment can be isolated; from cultures of the pyocyaneus two or three pigments can be isolated. 4. Indol is produced by the bacillus pyocyaneus, while tests of this form were negative. 5. In bouillon cultures this organism produces a cloudy medium with a thick mycoderma, unlike the corresponding changes of the pyocyaneus.

Diseases of the Nerves Consecutive to Suppurating Inflammations of the Fingers.—Gerhardt reports four cases of motor, sensory and trophic disturbances in the region of the nerves of the arm, and diffuse multiple neuritis, appearing a few weeks after a panaritium, necropsy furuncle or crushed fingers. Each gradually recovered.—*Deu. Med. Woch.*, January 20.

Women Students at Berlin.—A hundred and sixty-two women are now studying at the University, although by no means admitted to the full privileges of the University; three, in the theologic course; three, law; and one, medicine. There are twenty-six Americans among them. A separate dissecting and preparation room has been set apart for women students, with a special course of lectures by Professor Benda.

New Secret Order for Physicians.—The Mystic Order of Disciples of Æsculapius, is being organized by Frank C. Hoyt, M.D., superintendent of the Iowa Hospital for the Insane, Clarinda, Iowa. It is designed to work in conjunction with medical societies, and in no way supplant them, and the enterprise is fraternal, not commercial in character. Full information can be obtained by addressing Dr. Hoyt.

Amputations of Extremities without Ligatures.—Barber has used this method in six amputations (*Med. Age*, March 10), all acute, all of lower extremities, and all the result of crushing injuries. He asserts that the advantages are that no blood is lost, there is no oozing, and no time is lost in clamping, tying and applying hot cloths to arrest hemorrhage. He uses the ordinary rubber roller bandage and a section of rubber tubing wound tightly around the limb above this bandage before it is removed. After the amputation is made and the flaps nicely adjusted, he takes a long piece of catgut and with a good sized needle stitches into the muscles, next the bone, at one edge of the wound, and sews back and forth the same as in closing any wound by deeply buried sutures. Bringing the muscular tissue into snug apposition, not too tightly, he whips the outer and last row of stitches by the over-and-over method and then stitches the skin over all. The Esmarch is then removed.

Massage as an Occupation for the Blind.—Bennett (*Phil. Med. Jour.*, March 5) advocates this for the large number of blind in this country, which he estimates at 56,000 persons, the majority of whom are dependent on private benevolence or public funds. He addressed inquiries to every superintendent of a State school for the blind throughout the country and from their responses believes that the percentage of their pupils who become self-supporting after graduating are: Illinois, 6 per cent. of the males and 1.5 per cent. of the females; North Carolina, 80 per cent. of the male whites; Texas, 75 per cent. of the males; Wisconsin, 20 per cent. of the males and 5 per cent. of the females. He considers the mechanical trades barred to the women while in case of the men there exists a prejudice against employing the blind. The women's chances in the matrimonial market he considers *nil*. He says the blind can make massage their own particular occupation, and they possess some qualifications that eminently fit them to excel in this; among these qualifications delicacy of touch and the blindness itself.

Chronic Purulent Otitis Media.—Burnett (*Phil. Med. Jour.*, February 26) reports four recent cases of excision of the malleus and incus for this condition. The results were an immediate lessening of the discharge in all the cases, total cessation and cicatrization of the fundus in two, and improved hearing in three. He finds two years may be necessary for total cessation of discharge after excision. As a rule, the longer the duration of the purulency, the longer the after-treatment necessary before a cure of the chronic purulency is affected. While an improved state of the discharging ear can be promised immediately, from an operation, the time of total cessation of the discharge can not be accurately foretold. This operation of excision, with the better drainage it affords, and the more complete antisepsis permittted, the general health of the patient being improved, the hearing often benefited and the advance of caries and necrosis checked, he considers an efficient prophylaxis against deafness and serious intracranial lesions.

Recurrent Multiple Neuritis of Specific Origin.—In "Some Rare Affections," in the *New York Polyclinic* for February 15, is reported a case of this rare condition in a man 35 years old. There was marked paresis of both lower extremities, considerable atrophy of the anterior thigh muscles, weakness of these and the lower spinal muscles. The muscles below the knees were less affected, but distinct atrophy of both anterior tibial groups. The anterior thigh muscles did not respond to the faradic current and galvanic response was diminished. The knee jerks were absent. On mercurial treatment the right knee jerk soon returned, the left only by reinforcement. The volume of the thigh muscles of the right thigh improved more rapidly than of the left. In eight weeks the patient was able to walk without assistance, but there has been vacillating behavior of the knee jerks, immobility of the pupils, transitory ptosis and transitory palsy of the tongue during the succeeding two years, with subjective disturbances of sensation at intervals.

Control of Nasal Hemorrhage.—Gleason (*Laryngoscope*, March) reports having for a year used the following method in severe post-operative nasal hemorrhage: Wrapping a piece of cotton loosely about a probe he thrusts it, dripping with a fifteen volume solution of hydrogen peroxid, along the floor of the nose until the pharynx is touched. The mass of cotton should be large enough to completely fill the inferior meatus. It is necessary, in most cases, to hold the cotton in position for a few moments with the finger tip, during which time the probe is withdrawn. If necessary, the plug of cotton is then held in position by means of smaller pieces of absorbent cotton, saturated with peroxid, packed into the anterior naris in front of it. After the smaller masses of cotton are removed from the anterior portion of the naris, there yet remains a large plug of cotton, which, if removed quickly, suddenly removes pressure from the bleeding spot and causes renewed hemorrhage. This accident can often be prevented by removing the mass of cotton very slowly, with steady, gentle traction exerted at intervals of two or three minutes in order that five or ten minutes elapse before the plug is entirely withdrawn from the nose. In cases of severe nasal hemorrhage, it is well to allow at least twenty-four hours to elapse before removing the packing, and if hemorrhage then recurs to attempt to control it by the insertion of a smaller mass of cotton dripping with peroxid.

Myxedema—like Conditions in the Negro.—Berkley (*Am. Jour. of Insanity*, January) reports the results of an investigation carried out in 1897 on about 1600 inmates of the city asylum and the adjacent almshouse in Baltimore. Of the 1600 inmates, about 300 were negroes. Eight cases of a peculiar thickening of the skin, local in character, in the blacks, was noted, identical in all respects with that present in cases of sporadic cretinism in the Caucasian race, but less diffuse. Among the idiots four examples were noted, one in a case of paretic dementia in the third stage, one in a case of acute mania, one in a demented patient whose history was unobtainable, and one in an individual who exhibited no mental change beyond extreme slowness. Departures from the normal in the thyroid were always pres-

ent, in seven cases being non-palpable or below normal size and in one case enlarged. In two cases the hair was coarse, thin and rough. Abnormally broad bones existed in but one case, the idiot approaching a cretinoid state, but even in this case there seemed no defect in the growth lengthwise. The regions of the fontanelles had no abnormalities, though the skull development showed many abnormalities. The secretions of the skin seemed normal, with little dryness and roughness over the myxedematous areas. But two cases showed changes in the general bulk of the body, and one case pendulous abdomen. Trophic lesions and enlargement of the lymphatics was not found.

Pregnancy and Ovarian Tumors.—Swan (*Bull. of the Johns Hopkins Hosp.*, March) reports another case of solid ovarian tumor complicating pregnancy, and from a review of the literature on the influence of pregnancy on the growth of such tumors, draws the following conclusions: 1. Solid neoplasms of the ovary complicating pregnancy are exceedingly rare. 2. The diagnosis may be difficult. In certain cases it may be aided by recto-abdominal palpation under narcosis, using Kelly's method to gently produce artificial descensus of the uterus. The physical examination with the signs of pregnancy, and those which belong more particularly to solid ovarian growths, generally enable us to make a probable diagnosis and one sufficient to warrant an exploratory section. 3. The prognosis in case of solid growths of the ovary complicating pregnancy is much worse, both for the mother and child, than in those of cystic neoplasms of these organs. Abdominal section and extirpation of solid tumors during the early months of pregnancy produce equally good results, so far as the fetus is concerned, as in case of cysts. The result to the mother depends on the malignant or benignant nature of the growth. 4. In extirpation during the second to fourth month of gestation, the maternal mortality is but 5 per cent., due to hemorrhage, shock, sepsis, etc., whereas the fetal mortality due to abortion is only 20 to 22 per cent. as compared with 40 per cent. for the former, and 80 per cent. for the latter when these cases are left to unaided nature. 5. The compulsory operation (during the latter half of gestation, during labor, or the puerperium) will rarely be required.

Medical Board Can Appeal.—The Oregon statute of 1895, authorizing the organization of a board of medical examiners, empowers it, among other things, to revoke the license of practicing physicians for unprofessional or dishonorable conduct. In case of a revocation, the licentiate is given the right of appeal to the circuit court in and for the county in which the hearing was had. Either party may appeal from the judgment of the circuit court to the supreme court in like manner as in civil actions, within sixty days after the rendition thereof. Now how about an appeal by the board of medical examiners? The case of State vs. Estes developed the contention that the board of examiners not being a party to the action, as such had no authority to take an appeal from a judgment of the circuit court overruling the action of the board in revoking the license of the defendant. Even the supreme court of Oregon admits, in the decision on the point which it rendered Dec. 7, 1897, that it is difficult to determine from this crude piece of legislation just what procedure is meant to be established for taking and perfecting an appeal from the circuit to the supreme court when the judgment is in favor of the accused practitioner. The language of the act, that "either party may appeal," it says, would seem to allude more especially to the parties to the proceeding and not to the tribunal charged with the function of determining the cause as between them. But there is a further provision in the statute that is a plain recognition of the right, while not conferred in express terms, of the board also to appeal from the decision of the circuit to the supreme court in case the judgment should be adverse to its decision, and the supreme court thinks its effect is to empower the board to prosecute an appeal in vindication of its own findings, and it accordingly holds that the board may appeal in such case. Attorneys, the supreme court further holds, are sufficiently authorized to prosecute an appeal for the board when they have been directed to do so by its president, and the board has afterward ratified and confirmed their action in the matter.

Antitoxin Manufacture by Cities.—Dr. B. T. Whitmore of New York is out in a trenchant article against the manufacture of antitoxin by the municipality of New York city. This paragraph presents the fact and the essence of the argument: "The City of New York is engaged in the drug business at the expense—and it is a heavy expense, too—of the people, and in defiance of the principle and fact that it is no part of the business of government to engage in or be identified in any way with artistic, commercial or industrial pursuits. Attention has been called several times to this petty and pitiable attempt to fasten paternalism upon the administration of municipal affairs. But never yet have I seen the point made that New York City's identification with the drug business, in manufacturing and selling antitoxin, is maintained at a cost which is an absolute and foolish waste of public money. This is the truth, however, and it will take but a few moments and a few figures to estimate it." Dr. Whitmore then proceeds to show that "the city is paying $60,000 every year for $10,000 worth of antitoxin," from which it is clear that the New York taxpayer "is paying pretty dear for his therapeutic whistle." "Is there any reason in the world," the article continues, "why with these overwhelming facts against it, the city of New York should continue in the manufacture of antitoxin? None. A State law provides for the inspection of all antidiphtheritic serum by a board of examiners before its exposure for sale. It can not be urged, therefore, that the city is in the business for the protection of the public, for the board of examiners would offer that protection amply. It has not, therefore, a leg of any kind to stand upon." When the New York city enterprise was started there was no available supplies of reliable antitoxin and there was reason therefore for the city undertaking the manufacture of the article. Under present conditions, however, those municipalities which, like New York, entered the field in an emergency, can now well afford to withdraw in favor of private enterprise, providing such compensating legislation is passed as will insure pure and adequate supplies of antitoxin on equitable terms to the public. —*Western Druggist*, March.

Hypertrophy of the Prostate.—In the *Medical Record* for March 5, Meyer writes on the Bottini galvano-caustic operation for hypertrophy of the prostate. After the bladder has been carefully irrigated and emptied, the posterior urethra is locally anesthetized with cocain or eucain, 1½ drams of a 1 or 2 per cent. solution (eucain 5 per cent.) being injected. The incisor introduced, Bottini burns with his incisor one, two, or, better still, three grooves at one sitting; a short one toward the symphysis, another just opposite directly backward toward the rectum, and a third one through that lateral lobe of the prostate which appears to be the larger one. According to the number of grooves cut, the operation requires from two to five minutes. Soon after the operation most of the patients complain of a burning sensation when commencing to pass water. They may get up right after the operation in order to urinate, and can be permitted to be permanently out of bed on the second day, the general reaction of the operation being in most instances almost *nil*. If the bladder has been carefully irrigated, the patients will rarely develop any rise of temperature; bleeding, if there be any at all, is generally of minimal amount. The urine passed during the first night following the operation is often macro-

scopically free from blood. In more than eighty cases of this kind, Bottini has not seen a single serious hemorrhage. For this reason he warns against the use of a permanent catheter. Thus the after-treatment is comparatively very simple. If necessary, the bladder should be washed out daily in order to improve the present cystitis, best with a cold solution, as this will strengthen the contractibility of the detrusor muscles. Bottini's operation leaves the important anatomic parts absolutely intact, without destroying tissues which for certain periods of the life of the male subject are of great importance (vasa deferentia, testicles), and without sharing, to a great extent at least, the dangers of other radical operations (ligation of internal iliacs, total extirpation).

Book Announcements.—Messrs. Lea Brothers & Co. announce for early publication the following books by eminent authorities:

A MANUAL OF OTOLOGY. By Gorham Bacon, A.M., M.D., professor of otology in University Medical College, New York. With an introductory chapter by Clarence J. Blake, M.D., professor of otology in the Harvard Medical School, Boston, Mass. In one 12mo volume, with numerous illustrations.

THE TREATMENT OF SURGICAL PATIENTS BEFORE AND AFTER OPERATION. By Samuel M. Brickner, M.D., visiting surgeon at the Mt. Sinai Hospital, New York. In one volume of about 400 pages, with illustrations.

A TEXT-BOOK OF DENTAL PATHOLOGY, THERAPEUTICS AND PHARMACOLOGY. Being a Treatise on the Principles and Practice of Dental Medicine. By Henry H. Burchard, M.D., D.D.S., special lecturer on dental Pathology and therapeutics at the Philadelphia Dental College, Philadelphia. In one octavo volume of about 550 pages, with 400 illustrations.

THE PRINCIPLES OF TREATMENT. By J. Mitchell Bruce, M.D., F.R.C.P., physician and lecturer on materia medica and therapeutics at Charing-Cross Hospital, London. In one octavo volume.

DISEASES OF THE NOSE, THROAT, NASO-PHARYNX AND TRACHEA. A Manual for Students and Practitioners. By Cornelius G. Coakley, M.D., professor of laryngology in University Medical College, New York. In one volume, 12mo, of about 400 pages, with numerous illustrations, many of which are in colors.

DISEASES OF WOMEN. A Manual of Non-surgical Gynecology, designed especially for the use of Students and General Practitioners. By Francis H. Davenport, M.D., instructor in gynecology in the Medical Department of Harvard University, Boston. Third edition, thoroughly revised and enlarged, with many additional illustrations.

A TREATISE ON GYNECOLOGY. By E. C. Dudley, A.M., M.D., professor of gynecology in the Chicago Medical College, Chicago. In one octavo volume of about 600 pages, with 425 illustrations, many of which are in colors.

A TEXT-BOOK OF ANATOMY. By American Authors. Edited by Frederic Henry Gerrish, M.D., professor of anatomy in the Medical School of Maine. In one imperial octavo volume, copiously illustrated in colors.

MANUAL OF SKIN DISEASES. With Special Reference to Diagnosis and Treatment. For the use of students and general practitioners. By W. A. Hardaway, M. D., professor of skin diseases in the Missouri Medical College. Second edition, entirely rewritten and much enlarged. In one 12mo volume with illustrations.

THE PRINCIPLES AND PRACTICE OF OBSTETRICS. By American Authors. Edited by Charles Jewett, M.D., professor of obstetrics in the Long Island College Hospital, Brooklyn, N. Y. In one octavo volume, with many illustrations in black and in colors.

MESSRS. P. BLAKISTON, SON & Co., have in press the third edition of "Hamilton on Tumors," rewritten and enlarged; copious illustrations.

Against the Caffery Bill.—

ROOMS OF THE NEW YORK
BOARD OF TRADE AND TRANSPORTATION,
203 BROADWAY.
NEW YORK, March 26, 1898.

Hon. JACOB H. GALLINGER,
United States Senate, Washington, D. C.

Dear Sir:—The threatened invasion of this country by cholera in 1892 was the occasion for the appointment by the New York Board of Trade and Transportation of a special committee which investigated with great thoroughness the question of health protection by quarantine in the United States, and the Board cast its influence for the bill which became a law on Feb. 15, 1893, viz.: "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service."

The epidemic of yellow fever last year in the Southern States, with the attendant loss of life and disturbance of commerce and travel, and the lack of harmony of action between the State, or local and the National Health Authorities, and the inability of the latter to enforce its regulations seemed to call for further legislation.

This Board, therefore, on Nov. 10, 1897, appointed a second able special committee to investigate the existing conditions, and that committee after four months of careful study and inquiry reported its conclusions on March 9, 1898.

The Committee addressed personal letters of inquiry to nearly one thousand professional men, sanitarians and men engaged in transportation and commercial pursuits.

The inquiries were directed mainly to the following points, viz.:

FIRST.—Quarantine status and administration in foreign countries furnishing precedents for the United States. A, Border; B, Internal.

SECOND.—The present status of quarantine in the United States. A, Border Defense; B, Interstate; C, State and Local.

THIRD.—The existing system of quarantine administration in the United States. A, Cost; B, Injury to and Restrictions Imposed on Commerce and Travel; C, Security afforded.

FOURTH.—Legislation needed for lessening injury to and restrictions on commerce and travel, and to afford greater security to the country. A, Increase Power of Marine-Hospital Service and How; or, B, Create a National Department of Health; or, C, Create a National Department of Commerce with a Bureau of Health; or, D, other suggestions.

FIFTH.—The power of Congress under the Constitution to regulate matters affecting the health of the people. A, National; B, Interstate; C, State and Local.

Hundreds of valuable replies were received to these inquiries and only thirteen of them endorsed the proposition to enlarge the powers of the Marine-Hospital Service. All of these thirteen letters contained the one chief argument that the Marine-Hospital Service was a good nucleus to build a National Health Bureau upon.

On the other hand a very large majority of the replies expressed the opinion that the National Government can never hope to create a successful national health organization based upon the Marine-Hospital Service, as a nucleus, because in many States the bitter hostility to the Marine-Hospital Service, engendered by its own acts, is so formidable as to preclude any possibility of harmony between it and such State and local authorities. The opinion was that to give the Marine-Hospital Service still more arbitrary powers, as proposed in the Caffery bill, without the obligation to consult or in any way regard the local authorities, would only widen the breach, intensify the bitterness and render resort to force necessary to carry out the Marine-Hospital Service regulations.

An officer of the Marine-Hospital Service, in his statement to our committee, admitted that under the conditions existing in the South last Fall, the Marine-Hospital Service would have been powerless to enforce its regulations "even if it had the entire standing army of the United States at its command." For this reason few attempts were made to enforce the law locally and none met with success except where State and local authorities co-operated.

The Caffery Bill if passed would be absolutely inoperative unless backed and enforced by United States Marshals or United States troops.

It does not seem possible that Congress contemplates carrying a war of conquest into any of the States of this Union, and it would be the height of folly to enact any health law which would be a dead letter unless enforced by armed officers or troops, and when there is no intention of so enforcing it.

The consensus of testimony before our committee was overwhelmingly in opposition to the letter and spirit of the Caffery bill. It stamped the bill as narrow and wholly inadequate to meet the very pressing needs of the country. The Caffery bill exaggerates the importance of quarantine, and makes no other provision for public health protection, while advanced sanitary science pronounces quarantine to be barbarous and obsolete. The practically uniform opinion was that the country is now ready for a law which will make quarantine of constantly decreasing importance as local sanitary administration shall be stimulated and perfected. And it was very clearly shown that any law that will successfully meet the situation and the needs of the country must of necessity have due regard for the wishes and views of the people, must foster and encourage good will, a spirit of harmony and co-operation between States and between the National authorities and local authorities for

the common well being. The Caffery bill is the antipode of this view. It is abnoxious in its spirit, and would be more so in its enforcement, to the great mass of the American people in all the States.

The Spooner bill, on the other hand, is in full accord with the most enlightened modern views of health protection. It does not abolish quarantine, but in time would bring about conditions which would make quarantine almost unnecessary.

It recognizes several departments of the National Government, and every State and Territory as interested and important factors in the scheme of health protection, and gives to each a voice in the framing of health regulations, and this is done by means of organization so simple as to be immediately moved to action in emergencies. It removes friction and hostility and promotes harmony and co-operation, which are essential to the success of any National health law. It violates no principle of National or local policy.

Our Committee went over all this ground with the greatest deliberation, and although their views upon taking up the question had a decided leaning toward the proposition to give the Marine-Hospital Service the absolute and arbitrary power it asks for, they finally and unanimously reached the opinion that the passage of the Caffery bill would be a serious injury to the people of the United States by delaying and hindering the broader, better, and more certain solution of the problem which the Spooner bill will afford.

Our Committee therefore reported favorably on the Spooner bill recommending some amendments which the Board endorsed most heartily, and, as we are informed, Senator Spooner and the friends of his bill have accepted and incorporated in it.

Our Committee knowing of the great interest you take in this question, and the value which everywhere attaches to your opinions regarding it, have desired me to hand you a copy of their report, which I have the honor to enclose herewith, and to ask for it your careful consideration. They requested me at the same time to make the foregoing statement regarding their investigations and some of the considerations which influenced their conclusions.

I can only add that when I served with you in the House I had the highest regard for the Marine-Hospital Service and still have the greatest respect for it, but conditions have changed and demand a broader and more comprehensive plan of health protection, and I therefore feel that the conclusions of our Committee are wise, practical and patriotic, and I sincerely hope that they will have some influence upon Congress.

I remain very respectfully,

DARWIN R. JAMES, *President.*

Colleges.

ENSWORTH MEDICAL COLLEGE, St. Joseph, Mo., at the twenty-first annual commencement, March 8, graduated twelve new doctors.——The St. Louis College of Physicians and Surgeons awarded 105 degrees March 16.——The graduates from Keokuk (Iowa) Medical College, at the annual commencement March 15, numbered eighty.——The Kansas Medical College, Topeka, conferred eighteen degrees at the annual commencement, March 22.——The eighteenth annual commencement of the University Medical College, Kansas City, Mo., was held March 23; the graduating class numbered sixty-nine.——At the Kansas City Medical College's twenty-ninth annual commencement, March 21, forty-one degrees were conferred.

Hospitals.

THE CHICAGO HOME FOR INCURABLES has received $40,000 from D. B. Shipman, making the erection of an annex increasing the capacity of the institution from 140 patients to 200, possible. — Emergency Hospital, Leavenworth, Kan., was burned recently; loss $8,000.——The Atlanta (Ga.) Hebrew Orphans' Home has received £1500 from the Baroness de Hirsch. The money will be devoted to establishing a hospital in connection with the orphanage.

Louisville.

PHARMACY.—Eleven graduates received diplomas at the annual commencement of the Louisville College of Pharmacy the 27th ult.

QUARTERLY.—With the April issue *Mathew's Quarterly Journal of Rectal and Gastro-Intestinal Diseases* will cease to be issued quarterly, but will appear as a monthly. At a recent meeting of the Louisville Surgical Society it was adopted as the official organ of that Society, its proceedings appearing in it exclusively. It will be changed in name to the *Louisville Journal of Surgery and Medicine*, taking in all branches of medicine and surgery, losing its distinctive characteristics as a special journal, though it is the purpose of the editor, Dr. J. M. Mathews, to include in it this department, as a special feature. Dr. Henry E. Tuley, who has been associated with Dr. Mathews in the *Quarterly*, will not be connected with the monthly.

TRUSTEES.—At the last meeting of the general council the following were elected as members of the Board of Trustees of the Medical Department of the University of Louisville: Drs. George W. Griffith and John Buschemeyer. The term of the incumbent is for ten years, service being without compensation. Dr. Griffith succeeds himself and Dr. Buschemeyer succeeds James A. Leech.

GRADUATES.—The Louisville Medical College held its twenty-ninth annual commencement on the afternoon of the 25th ult. Seventy-four graduates received diplomas.

LICENSE.—The ordinance creating a license of $10 yearly on physicians, dentists, midwives and chiropodists has been approved by the mayor and will at once become a law. The physicians unanimously protested against it by a petition, but to no avail.

Cincinnati.

A BILL has been introduced in the legislature to compel druggists to label all drugs or compounds sold as "poison," which contain poisonous ingredients. This does not apply to physicians' prescriptions.

A BILL has been introduced in the senate to abolish the present State Board of Medical Examination and Registration, and a new one is proposed with the reduction in the salaries of the secretary and members.

THE mortality report for the week shows: still-births, 8; zymotic diseases, 11; phthisis pulmonalis, 11; other constitutional, 7; local, 67; developmental, 7; violence, 4; total, all causes, 107; under one year of age, 20; between one and five years, 17; annual rate per thousand, 13.73; preceding week, 127; corresponding week, 1897, 110; 1896, 123; 1895, 134.

THE annual appropriations for Ohio State medical institutions is announced as follows: Athen's State Hospital, $137,-450; Cleveland Hospital, $148,600; Columbus Hospital, $161,-125: Dayton Hospital, $117,000; Longview Hospital, $123,000; Massillon Hospital, $150,000; Toledo Hospital, $161,050; Epileptic Hospital, $152,958.

THE senate last week passed a bill to reorganize the State Board of Health by giving it power to assume charge of affairs in localities where contagious or infectious diseases make their appearance and the local board fails to exercise proper precautions against an epidemic, by the establishment of a State bacteriologic laboratory where specimens are to be examined free, upon request, and by a new system of making uniform reports of vital statistics to the various probate judges.

Philadelphia.

PRESENT STATUS OF TYPHOID IN PHILADELPHIA.—The report of the Board of Health of this city for the week ending March 19, shows a rapid decline of the typhoid fever epidemic. It will be remembered that this epidemic started soon after the bursting of a sewer pipe, November 16, which contaminated the Wissahickon Creek and was pumped into the Queen Lane Reservoir. Although the leakage was stopped within fifteen minutes, yet the damage had been done and the outbreak of typhoid occurred until it had reached serious proportions, there being 212 cases in the city the week ending January 22, and 201 cases January 15. The week ending March 19 there were reported 57 new cases with 12 deaths, as against 81 cases and 7 deaths for the week preceding. The total number of deaths for this week were 484, an increase of 21 over last week and a decrease of 59 over the corresponding period last year. Of this number 175 were children under 5 years of age.

THE KLEBS-LOEFFLER BACILLUS AND QUARANTINE IN CITIES.—Gin Sing, a Chinaman, and his son 7 years old, are two citizens of Philadelphia. About three or four weeks ago the lat-

ter suffered from a sore throat but did not seem to be very sick. Cultures from swabs of the throat, made by the city bacteriologic department, however, revealed Klebs-Löffler bacilli. It was demonstrated that the father's throat also showed the presence of this organism, although neither have ever experienced any serious inconvenience from the disease. Gin Sing is now up in arms against the city authorities for having quarantined his laundry although he is not sick enough to go to bed. Dr. J. Howard Taylor, medical inspector of the Board of Health, stated recently that science had so far failed to make any absolute diagnostic differences between the Klebs-Löffler bacillus from certain other bacilli in throat, and that to be sure that no cases of diphtheria should go unquarantined that all cultures showing the former germs would be classed as diphtheria and a quarantine instituted for the proper period, the justice of which can be at once understood.

PHILADELPHIA PHYSICIANS READY FOR WAR.—The Philadelphia Emergency Corps recently adopted the following resolution, subsequently sanctioned by the Mayor:

WHEREAS, The Philadelphia Emergency Corps has always in the past been ready to meet any and all calls to duty in the interest of the public and humanity, be it therefore

Resolved, That its members, an organized body of physicians and surgeons, hereby tender their services to the National Government should the necessity arise for the same.

Signed: Thomas H. Andrews, Medical Director; G. R. Hulsizer, Commander; William H. Ziegler, Herman Bergin, George Sinnamon, Walter Strong and R. B. Judge, Committee.

PHILADELPHIA ALSO AFFLICTED WITH GRIPPE.—La grippe, which has been quite extensive here for the past several weeks, bas begun to decline. It became more common toward the latter part of February, owing possibly to sudden changes in the weather. Taken as a whole, it may be said that of those affected the cases were accompanied by excessive coughing and as a rule confined to the respiratory passages. Neuralgic symptoms were common, and extreme prostration accompanied by great chilliness of the body with flashes of heat and cold. Many cases had previously suffered with the disease, which shows the nature of this terrible malady.

Societies.

The following meetings are noted:

Illinois—Champaign County Medical Society, Champaign, March 16; Chicago Academy of Medicine, March 18; Chicago Medical Society, March 30; Peoria City Medical Society, March 22.

Indiana—Montgomery County Medical Society, Crawfordsville, March 15; Vanderburg Medical Society, Evansville, March 15; Vigo County Medical Society, Terre Haute, March 17.

Iowa—Scott County Medical Society, Davenport, March 17.

Maryland—Baltimore County Medical Association, Baltimore, March 17.

Missouri—Marion County Medical Society, Palmyra, March 17; St. Louis Medical Society of Missouri, March 19 and 26.

New York—Syracuse Academy of Medicine, March 22.

Ohio—Erie County Medical Society, Sloane, March 17; Lucas County Medical Society, Toledo, March 18.

Pennsylvania—Gloucester County Medical Society, Woodbury, March 17.

CHANGE OF ADDRESS.

Allen, G. V., from Topeka, Kas., to Murray, Neb.
Birkofer, W. J., from Thor to Dickens, Iowa.
Booker, F. E., from 511½ N. 6th to 308 N. 12th St., Richmond, Va.
Brown, A. P., from St. Louis, Mo., to Elberfield, Ind.
Brashear, B. B., from 211 Prospect St. to "The Clarendon," Cleveland, Ohio.
Burkhart, J. R., from Keokuk to Fort Madison, Iowa.
Best, W. W., from Louisville, Ky., to Bolckow, Mo.
Cryer, M. H., from 1527 Arch to 1420 Chestnut St., Philadelphia, Pa.
Cheadle, C. M., from Keokuk, Iowa, to Buda, Ill.
Corr, A. C., from Chicago to Carlinville, Ill.
Crockett, E. N., from St. Louis, Mo., to Long Creek, Ore.
Furay, C. E., from 2237 Seward to 2409 North St., Omaha, Neb.
Gibbs, M. D., from Hartford to Mendota, Mo.
Griffin, J. M., from Lathan to Rocky Mount, Mo.
Germer, H. G., from Chicago, Ill., to Canastota, N. Y.
Hargrove, P. M., from Keokuk, Iowa, to Kidder, Mo.
Haines, J. P., from 10 E. 22d St. to Madison Av. and 26th St., New York.
Jorgensen, P. P. M., from Iowa City to Zwingle, Iowa.
Kauffman, E. J., from Cincinnatti, Ohio, to 14 E. 17th St., New York.
King, D. H., from Keokuk to Abington, Iowa.
Kinneman, J. G., from Indianapolis to Mexico, Ind.
Kelsey, T. W., from Indianapolis to Converse, Ind.
Laibe, F. J., from 831 Milwaukee to 711 N. Claremont Av., Chicago.
Luehr, E., from 256 92d St. to 9241 Houston Av., Chicago.
Layman, R. B., from Louisville, Ky., to Dandridge, Tenn.
Mills, W. A., from 33 W. Lexington to 802 Dolphin St., Baltimore, Md.
Mosher, M. D., from Keokuk, Iowa, to Sandwich, Ill.
McManus, E. A., from Detroit to Sherman, Mich.
Morrow, A. M., from Keokuk to Salina, Iowa.
McDougall, G. T., from 70 Farrell Av. to 583 11th St., Milwaukee, Wis.
Mott, B. I., from 705 Nicollet Av. to Sykes Blk., Minneapolis, Minn.
Nulton, Ida, from Keokuk, Iowa, to Hartford, Mo.
Patch, Wm., from Sibley to Ellsworth, Ill.
Pence, L. W., from Iowa City to Fertile, Iowa.
Parrington J. M., from Indianapolis, Ind., to Emporia, Kas.
Robinson, J. L., from Keokuk to Monroe, Iowa.
Ryan, W. C., from Keokuk to Croton, Iowa.
Rives, W. C., from New York, N. Y., to Readville, Mass.
Smith, L. E., from 70 E. Pine to 117 W. 8th St., Chattanooga, Tenn.
Stover, E. E., from Iowa City to Lucas, Iowa.
Sugfield, H. D., from Keokuk, Iowa, to Ferris, Ill.
Spiller, O. C. H., from Indianapolis, Ind., to Maynard, Texas.
Thielen, M. H., from Iowa City, Iowa, to Chanute, Kas.
Taylor, A. A., from 915 I St., N. W., to 1103 H St., N. W., Washington, D. C.
Walker, H. T., from Keokuk to 857 Delhi St., West Dubuque, Iowa.
Wright, John, from San José, Cal., to Clinton, Ill.
Williamson, A. A., from Indianapolis to Kingman, Ind.
Woods, E. A., from 720 14th Av., S. E., to 324 15th Av., S. E., Minneapolis, Minn.

LETTERS RECEIVED.

Allen, J. B. (2), Cambridge City, Ind.
Brown, A. P., St. Louis, Mo.; Burns, H. H., Athol, Mass.; Bouffleur, Albert I., Chicago; Bovee, J. W., Washington, D. C.; Barker, L. T., Baltimore, Md.; Burr, C. W., Philadelphia, Pa.; Brown Hotel Company, The, Denver, Colo.; Brewster, Q. E. Boston, Mass.
Cabor, A. C., Boston, Mass.; Cleveland, A. H., Philadelphia, Pa.; Capron, F. P., Providence, R. I.; Cheatham, Wm., Louisville, Ky.; Connor, Leartus, Detroit, Mich.; Cuthbertson, Wm., Chicago; Cleveland College of Physicians and Surgeons, Cleveland, Ohio; Capp, S. B., Devon, Pa.; Cannaday, Chas. G., Roanoke, Va.
De Courcy, J. O., St. Libory, Ill.
Elliott, H. G., New York, N. Y.
Frederick Co., Purdue, The, New York, N. Y.; Fox, L. Webster, Philadelphia, Pa.; Fowler, G. R., Brooklyn, N. Y.; Faries, Randolph, Philadelphia, Pa.; Feick Bros., Pittsburg, Pa.; Friend, Samuel, Milwaukee.
Gibson, Maris, Wilkesbarre, Pa.; Garber, J. B., Dunkirk, Ind.; Gerstein, Maurice, Boston, Mass.
Hemmeter, J. C., Baltimore, Md.; Hotz, F. C., Chicago; Hoyt, Frank, Clarinda, Iowa; Hare, H. A., Philadelphia, Pa.; Hall, Chas. Lester, Kansas City, Mo.; Hummel Advertising Agency, A. L., New York, N. Y.
Kelley Co, I. W., Chicago; Keiper, Geo. F., La Fayette, Ind.; Knapp, H., New York, N. Y.; Kane, Thomas L., Kane, Pa.
Lord, J. P., Omaha, Neb.
Laura Memorial Woman's Medical College, Cincinnati, Ohio; Lusk, Z. J., Warsaw, N. Y.; Lea Brothers & Co., Philadelphia, Pa.; Lockhart, J. W., Elo, Wis.; Loveland, B. C., Clifton Springs, N. Y.
Miller, Allen, Edgington, Ill.; Murray, J. A., Clearfield, Pa.; Mears, J. E., Philadelphia, Pa.; Miller, A. E. Boston, Mass.; Mastin, C. H., Mobile, Ala.; Makuen, G. H., Philadelphia, Pa.; Millbury, F. S., Brooklyn, N. Y.; Mayo, C. H., Rochester, Minn.; Monette, George M., New Orleans, La.; Mettler, L. Harrison, Chicago; Michael, Geo. J., Citronelle, Ala.
Newberry Library, The, Chicago; Newell, H. W., Baltimore, Md.
Penhall, F. W., Morton, Minn.; Pietrzycki, M., Dayton, Wash.
Roler, A. H., Chicago; Reynolds, Arthur R., Chicago; Root, E. H., Chicago.
Simmons, D. G. Adairville, Ky.; Shoemaker, John V., Philadelphia, Pa.; Steele, J. D., Philadelphia, Pa.; Stickler, J. M., Orange, N. J.; Sellers, C. P., Zanesville, Ohio; Seibert, W. H., Steelton, Pa.; Stearns, Frederick, & Co., Detroit, Mich.; Shimoneck, F., Milwaukee, Wis.; Schwab, L. W., Chicago; Sargent, E. H. & Co., Chicago; St. Charles Condensing Co., St. Charles, Ill.
Thelen, F. A. Arlington, Ill.; Turnbull, Laurence, Palm Beach, Fla.; Trelease, Wm., St. Louis, Mo.; Tiemann, Geo., & Co., New York, N. Y.
Weaver, H. B., Asheville, N. C.; Watherill, G. H., Denver, Colo.; Woodhull, Alfred A., Denver, Colo.; Ware, Lyman, Chicago; Woldert, E. A., Philadelphia, Pa.; Way, J. Howell, Waynesville, N. C.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from March 19 to 25, 1898.

Major Henry McElderry, Surgeon, is relieved from duty at Ft. Leavenworth, Kan., and will proceed to Omaha, Neb., and report in person to the commanding General, Dept. of the Missouri, for assignment to duty as chief surgeon of that Department.

Major George H. Torney, Surgeon, will be relieved from duty at the U. S. Military Academy, West Point, N. Y., on or about June 1, 1898, and ordered to Ft. Leavenworth, Kan., for duty.

Major John M. Banister, Surgeon, will be relieved from duty at Ft. Leavenworth, Kan., upon the arrival there of Major Torney, and ordered to the U. S. Military Academy, West Point, N. Y., for duty.

Capt. Robert J. Gibson, Asst. Surgeon, is relieved from duty at Ft. Thomas, Ky., and ordered to Ft. Meade, S. Dak., for duty.

Major Louis W. Crampton, Surgeon, will be relieved from duty at Ft. Meade, S. D., upon the arrival there of Capt. Gibson, and is ordered to Ft. McHenry, Md., to relieve Major Charles K. Winne, Surgeon.

Major Henry McElderry, Surgeon, now at Ft. Leavenworth, Kan., will proceed to Hot Springs, Ark., and report to the commanding officer of the Army and Navy general hospital for treatment therein.

Major Egon A. Koerper, Surgeon, the order assigning him to duty as chief surgeon, Dept. of the Platte, is revoked.

First Lieut. Charles Lynch, Asst. Surgeon, is relieved from duty at Ft. Sheridan, Ill., to take effect upon the completion of his examination for promotion, and ordered to Galveston, Texas, for duty.

First Lieut. John H. Stone, Asst. Surgeon, is relieved from duty at Ft. Riley, Kan., and ordered to Ft. Leavenworth, Kan.

Capt. Jefferson D. Poindexter, Asst. Surgeon, is relieved from duty at Willets Point, N. Y., and from temporary duty at Ft. Hamilton, N. Y., and ordered to report to Capt. William C. Gorgas, Asst. Surgeon, for the purpose of assisting him in examining recruits in that city, including the borough of Brooklyn.